VOAs only

23
24
28
35
45
46

Metals only

6	12	22
7	14	27
8	16	29
9	18	32
10	20	34
		36
		38
		40
		42
		44

Set came in on 1/31/12

Voc Rec on 2/1/12

1
2
3
4
5

Voc Rec on 2/2/12

13
15
17

1202001

Temp ✓

Metals

2, 4, 9, 11, 12, 14, 16, 18, 21
25, 27, 29, 31, 33, 37, 38
39, 40, 41, 42, 51

VOAs

6, 15, 19, 34, 35, 36, 47
48, 49, 50

1202003

Temp ✓

24 is missing the Voc 48

1202005

Metals

6-10, 24-31
40-47

VOA

11, 12, 21-23
48-50

- Aleo vial Broken For 01
- Aleo Vial Broken [redacted]
VOA 2 Vials Broken for 20

DIM0206182

DIM0206182

1202004

1202005

Metals
2, 4, 7, 9, 14, 16, 19, 20, 33 – 44

Report 2 of 3
Report 3 of 3

VOAs
5, 10, 12, 18, 45 – 49

Glycol – 22 sample vial Broken

Total number of samples	286
Total number of sample containers	2110
Total number of broken containers	8
Total number of coolers shipped	99
Total number of COC pages	164

13			
Total number of samples			48
	A	20	20
	B	1	2
	C	1	3
	D	6	24
	O	18	270
	P	2	32
Total number of sample containers			351
Total number of broken containers			0
Total number of coolers shipped			18
Total number of COC pages			28

15			
Total number of samples			46
	A	20	20
	C	4	12
	D	2	8
	O	10	150
	P	7	112
	Q	2	34
	W	1	23
Total number of sample containers			359
Total number of broken containers			0
Total number of coolers shipped			15
Total number of COC pages			24

01			
Total number of samples			50
	A	21	21
	C	10	30
	L	1	12
	O	16	240
	P	1	16
	V	1	22
	W	1	23
Total number of sample containers			364
Total number of broken containers			0
Total number of coolers shipped			17
Total number of COC pages			29

03			
Total number of samples			50
	A	21	21
	C	8	24
	O	20	300
	W	1	23
Total number of sample containers			368
Total number of broken containers			4
Total number of coolers shipped			13
Total number of COC pages			29

04			
Total number of samples			49
	A	20	20
	C	9	27
	O	19	285
	U	1	21
Total number of sample containers			353
Total number of broken containers			1
Total number of coolers shipped			19
Total number of COC pages			29

05			
Total number of samples			43
	A	17	17
	C	9	27
	O	15	225
	W	2	46
Total number of sample containers			315
Total number of broken containers			3
Total number of coolers shipped			17
Total number of COC pages			25

Methods for Surface Water Samples

Analyte Group	Matrix	Technique	Reference Method	Routine Reporting Levels
Alcohols Methanol Ethanol 1-Propanol 1-Butanol 2-Butanol	Non-potable water	GC-FID	SM 8015D	10 mg/L
Inorganic ions - Bromide Chloride Fluoride Ortho-phosphate as P Sulfate as SO4	Non-potable water	Ion Chromatography	EPA 300.0	 0.5 mg/L 0.25 mg/L 0.1 mg/L 0.25 mg/L 0.5 mg/ L
Mercury		Cold Vapor Spectrometry	EPA 245.1	0.2 µg/L
Nitrate/Nitrite Total Nitrogen	Non-potable water	Digestion of all forms of Nitrogen followed by automated colorimetric analysis	EPA 353.2 EPA 353.2	0.05 mg/L 1 mg/L
Phosphorus - Total	Non-potable water	Colorimetric - automated	EPA 365.4	0.05 mg/L
Residue -TDS	Non-potable water	Gravimetric	SM 2540C	10 mg/L
Residue -TSS	Non-potable water	Gravimetric	SM 2540D	10 mg/L

SM = Standard Methods
SW = SW846 method
EPA = EPA method

Methods for Surface Water and Ground Water Samples

		Glycol	
SW8321 Modified	2-Methoxyethanol	Water	100 ug/L
SW8321 Modified	2-Butoxyethanol	Water	10 ug/L
SW8321 Modified	Di ethylene glycol	Water	25 ug/L
SW8321 Modified	Tri ethylene glycol	Water	25 ug/L
SW8321 Modified	Tetra ethylene glycol	Water	25 ug/L

Methods for Surface Water and Ground Water Samples

Metals			
200.7	Aluminum (Al)	Water	200 ug/L
200.7	Antimony (Sb)	Water	60 ug/L
200.7	Arsenic (Ar)	Water	200 ug/L
200.7	Barium (Ba)	Water	200 ug/L
200.7	Beryllium (Be)	Water	5 ug/L
200.7	Boron (B)	Water	50 ug/L
200.7	Cadmium (Cd)	Water	5 ug/L
200.7	Calcium (Ca)	Water	500 ug/L
200.7	Chromium (Cr)	Water	10 ug/L
200.7	Cobalt (Co)	Water	50 ug/L
200.7	Copper (Cu)	Water	25 ug/L
200.7	Iron (Fe)	Water	100 ug/L
200.7	Lead (Pb)	Water	50 ug/L
200.7	Lithium (Li)	Water	200 ug/L
200.7	Magnesium (Mg)	Water	500 ug/L
200.7	Manganese (Mn)	Water	15 ug/L
200.7	Nickel (Ni)	Water	40 ug/L
200.7	Potassium (K)	Water	2000 ug/L
200.7	Selenium (Se)	Water	200 ug/L
200.7	Silver (Ag)	Water	10 ug/L
200.7	Sodium (Na)	Water	1000 ug/L
200.7	Strontium (Sr)	Water	200 ug/L
200.7	Thallium (Tl)	Water	200 ug/L
200.7	Tin (Sn)	Water	200 ug/L
200.7	Titanium (Ti)	Water	200 ug/L
200.7	Vanadium (V)	Water	50 ug/L
200.7	Zinc (Zn)	Water	20 ug/L
200.8	Aluminum (Al)	Water	30 ug/L
200.8	Antimony (Sb)	Water	2 ug/L
200.8	Arsenic (Ar)	Water	1 ug/L
200.8	Barium (Ba)	Water	10 ug/L
200.8	Beryllium (Be)	Water	1 ug/L
200.8	Cadmium (Cd)	Water	1 ug/L
200.8	Chromium (Cr)	Water	2 ug/L
200.8	Cobalt (Co)	Water	1 ug/L
200.8	Copper (Cu)	Water	2 ug/L
200.8	Lead (Pb)	Water	1 ug/L
200.8	Manganese (Mn)	Water	1 ug/L
200.8	Nickel (Ni)	Water	1 ug/L
200.8	Selenium (Se)	Water	5 ug/L
200.8	Silver (Ag)	Water	1 ug/L
200.8	Thallium (Tl)	Water	1 ug/L
200.8	Uranium (U)	Water	10 ug/L
200.8	Vanadium (V)	Water	5 ug/L
200.8	Zinc (Zn)	Water	2 ug/L

Methods for Surface Water and Ground Water Samples

	SVOC			
OLC03.2/3520C	1,1-Biphenyl	Water	5	ug/L
OLC03.2/3520C	1,2,4,5-Tetrachlorobenzene	Water	5	ug/L
OLC03.2/3520C	2,3,4,6-Tetrachlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4,5-Trichlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4,6-Trichlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dichlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dimethylphenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dinitrophenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dinitrotoluene	Water	5	ug/L
OLC03.2/3520C	2,6-Dinitrotoluene	Water	5	ug/L
OLC03.2/3520C	2-Chloronaphthalene	Water	5	ug/L
OLC03.2/3520C	2-Chlorophenol	Water	5	ug/L
OLC03.2/3520C	2-Methylnaphthalene	Water	5	ug/L
OLC03.2/3520C	2-Methylphenol	Water	5	ug/L
OLC03.2/3520C	2-Nitroaniline	Water	5	ug/L
OLC03.2/3520C	2-Nitrophenol	Water	5	ug/L
OLC03.2/3520C	3,3'-Dichlorobenzidine	Water	5	ug/L
OLC03.2/3520C	3-Nitroaniline	Water	5	ug/L
OLC03.2/3520C	4,6-Dinitro-2-methylphenol	Water	10	ug/L
OLC03.2/3520C	4-Bromophenyl phenyl ether	Water	5	ug/L
OLC03.2/3520C	4-Chloro-3-methylphenol	Water	5	ug/L
OLC03.2/3520C	4-Chloroaniline	Water	5	ug/L
OLC03.2/3520C	4-Chlorophenyl phenyl ether	Water	5	ug/L
OLC03.2/3520C	4-Methylphenol	Water	5	ug/L
OLC03.2/3520C	4-Nitroaniline	Water	5	ug/L
OLC03.2/3520C	4-Nitrophenol	Water	10	ug/L
OLC03.2/3520C	Acenaphthene	Water	5	ug/L
OLC03.2/3520C	Acenaphthylene	Water	5	ug/L
OLC03.2/3520C	Acetophenone	Water	5	ug/L
OLC03.2/3520C	Anthracene	Water	5	ug/L
OLC03.2/3520C	Atrazine	Water	5	ug/L
OLC03.2/3520C	Benzaldehyde	Water	5	ug/L
OLC03.2/3520C	Benzo(a)anthracene	Water	5	ug/L
OLC03.2/3520C	Benzo(a)pyrene	Water	5	ug/L
OLC03.2/3520C	Benzo(b)fluoranthene	Water	5	ug/L
OLC03.2/3520C	Benzo(ghi)perylene	Water	5	ug/L
OLC03.2/3520C	Benzo(k)fluoranthene	Water	5	ug/L
OLC03.2/3520C	Bis(2-chloroethoxy)methane	Water	5	ug/L
OLC03.2/3520C	Bis(2-chloroethyl)ether	Water	5	ug/L
OLC03.2/3520C	Bis(2-chloroisopropyl)ether	Water	5	ug/L
OLC03.2/3520C	Bis(2-ethylhexyl)phthalate	Water	5	ug/L
OLC03.2/3520C	Butyl benzyl phthalate	Water	5	ug/L
OLC03.2/3520C	Caprolactam	Water	5	ug/L
OLC03.2/3520C	Carbazole	Water	5	ug/L
OLC03.2/3520C	Chrysene	Water	5	ug/L
OLC03.2/3520C	Dibenz(a,h)anthracene	Water	5	ug/L
OLC03.2/3520C	Dibenzofuran	Water	5	ug/L
OLC03.2/3520C	Diethyl phthalate	Water	5	ug/L
OLC03.2/3520C	Dimethyl phthalate	Water	5	ug/L
OLC03.2/3520C	Di-n-butyl phthalate	Water	5	ug/L
OLC03.2/3520C	Di-n-octyl phthalate	Water	5	ug/L
OLC03.2/3520C	Fluoranthene	Water	5	ug/L
OLC03.2/3520C	Fluorene	Water	5	ug/L
OLC03.2/3520C	Hexachlorobenzene	Water	5	ug/L
OLC03.2/3520C	Hexachlorobutadiene	Water	5	ug/L
OLC03.2/3520C	Hexachlorocyclopentadiene	Water	5	ug/L
OLC03.2/3520C	Hexachloroethane	Water	5	ug/L
OLC03.2/3520C	Indeno(1,2,3-cd)pyrene	Water	5	ug/L

Methods for Surface Water and Ground Water Samples

	SVOC			
OLC03.2/3520C	Isophorone	Water	5	ug/L
OLC03.2/3520C	Naphthalene	Water	5	ug/L
OLC03.2/3520C	Nitrobenzene	Water	5	ug/L
OLC03.2/3520C	N-Nitrosodimethylamine	Water	5	ug/L
OLC03.2/3520C	N-Nitroso-di-n-propylamine	Water	5	ug/L
OLC03.2/3520C	N-Nitrosodiphenylamine	Water	5	ug/L
OLC03.2/3520C	Pentachlorophenol	Water	5	ug/L
OLC03.2/3520C	Phenanthrene	Water	5	ug/L
OLC03.2/3520C	Phenol	Water	5	ug/L
OLC03.2/3520C	Pyrene	Water	5	ug/L
OLC03.2/3520C	1-Methylnaphthalene*	Water	5	ug/L
OLC03.2/3520C	2-Methoxyethanol*	Water	5	ug/L

* On-Demand

Methods for Ground Water and Surface Water Samples

	VOCs					
5030/CLP trace	1,1,1,2-Tetrachloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1,1-Trichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1,2,2-Tetrachloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1,2-Trichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1-Dichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1-Dichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1-Dichloropropene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,3-Trichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,3-Trichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,4-Trichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,4-Trimethylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dibromo-3-chloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dibromoethane (EDB)	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,3,5-Trimethylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,3-Dichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,3-Dichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,4-Dichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2,2-Dichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Butanone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Chloroethylvinyl ether	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Chlorotoluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Hexanone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	4-Chlorotoluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	4-Methyl-2-pentanone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Acetone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Benzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromochloromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromodichloromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromoform	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromomethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Carbon disulfide	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Carbon Tetrachloride	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chlorodibromomethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chloroform	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chloromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	cis-1,2-Dichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	cis-1,3-Dichloropropene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Cyclohexane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Dibromomethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Dichlorodifluoromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Ethylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Freon 113	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Hexachlorobutadiene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Isopropylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methyl Acetate	Ground Water	1 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methylcyclohexane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methylene Chloride	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methyl-tert-butyl ether	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	m-Xylene/p-Xylene	Ground Water	1 ug/L	5030/CLP	Surface Water	10 ug/L
5030/CLP trace	Naphthalene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	n-Butylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	n-Propylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	o-Xylene	Ground Water	1 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	p-Isopropyltoluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	sec-Butylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Styrene	Ground Water	1 ug/L	5030/CLP	Surface Water	10 ug/L
5030/CLP trace	tert-Butylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Tetrachloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Toluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	trans-1,2-Dichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	trans-1,3-Dichloropropene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Trichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Trichlorofluoromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Vinyl acetate	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Vinyl chloride	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Acrylonitrile	Ground Water	5 ug/L	5030/CLP	Surface Water	5 ug/L

(*) Ordered More

CHEMICALS (Rooms J116 & J117)	J-WING (FULL BOTTLES) QTY.	REORDER AMT		Max. Reorder Amt. Pre-approved w/o HZ Sign Off
		when AMT =	REORDER:	
Acetonitrile (Optima)	10	4 bottles	8 bottles (4/case)	2 Cases
Acetone (Optima) 3 cases	2	4 bottles	4 bottles (4/case)	2 Cases
Hexane (Optima)	5	4 bottles	4 bottles (4/case)	2 Cases
Methanol (Optima)	6, 1 HPLC Grade	4 bottles	4 bottles (4/case)	2 Cases
Methylene Chloride (Optima) 1 case	3	8 bottles	4 bottles (4/case)	4 Cases
Methylene Chloride (Re-distilled)	2	-	-	-
Sodium Sulfate	½ 10 Kg bucket	2 bottles	4 bottles (4/case)	4 Cases
Hydrochloric Acid (Trace)	6	2 bottles	6 bottles (6/case)	1 Cases
Nitric Acid (Trace)	7	2 bottles	6 bottles (6/case)	1 Cases
Sulfuric Acid (Trace)	3	2 bottles	6 bottles (6/case)	1 Cases
pH buffer 4	1	1 bottles	4 bottles (1 case)	1Cases
pH buffer 7	3	1 bottles	4 bottles (1 case)	1 Cases
pH buffer 10	2	1 bottles	4 bottles (1 case)	1 Cases
Drierite	11 3 reused	6 bottles	36 bottles (3 cases)	3 Cases

1

SOLVENT CHEMICALS TO BE RE-CYCLED (Rooms G202 & G204)	(FULL BOTTLES) QTY.	Comments
Methylene Chloride (<10% Water)	17	Currently accumulating <10% Water and Methylene Chloride product for redistillation.

GAS CYLINDERS (Room J115)	NO. CYLINDERS IN BANKS (R/L)	MANIFOLD PRESSURE (R/L)	NO. CYLINDERS FULL NOT ON MANIFOLD	NO. CYLINDERS EMPTY	REORDER AMT		Max. Reorder Amt. Pre-approved w/o HZ Sign Off
					when AMT =	REORDER	
UHP Air	-	-	1	0	1	1	5
Argon (Liquid)	2/2	150 – 230	1	1	0	1	4
Argon (Gas)	-	-	1	0	2	1	1
Helium	6/6	2600 – 2000	1	8	6	10	18
UHP Hydrogen	-	-	0	0	0	1	HZ Signoff Always Required
Nitrogen gas (#051)	6/6	0 - 0	5	0	3	2	30
Oxygen	-	-	2	0	0	1	1
Argon Methane	-	-	3	0	3	2	4
Hydrogen/Argon	-	-	0	0	0	1	1

Chemical Inventory Form
Effective Date 2/20/08 JLS

An inventory of the chemical supplies and gases that are commonly used in analysis was completed on 01/20/12.
The following tables list the chemicals, supplies and gases found in the J-WING storage area.

DRY GOODS (Room J103)	QTY.	REORDER AMT	
		when AMT =	REORDER:
Bulk Towels	45	40 packs	100 packs (1 case=10 packs)
KIM Wipes (small box)	360	30 boxes	120 boxes (1 case=60 boxes)
KIM Wipes (Large Box)	52	15 boxes	45 boxes (1 case=15 boxes)
Glass disposal boxes	81	6 boxes	24 boxes (1 pack=6 boxes)
5 Gallon Drums	8	10 drums	36 drums
Pipette tips (200 - 1000 ul)	10	10 boxes	50 boxes
Pipette tips (0.5 - 200 uL)	22	10 boxes	50 boxes
Pipette tips (1 - 5 ml)	11	10 boxes	50 boxes
9" disposable Pasteur pipettes	9	2 boxes	4 boxes (1 case=4 boxes)
5 3/4" disposable Pasteur pipettes	2	2 boxes	4 boxes (1 case=4 boxes)
Small Latex Gloves	11	5 boxes	30 boxes
Medium Latex Gloves	25	5 boxes	50 boxes
Large Latex Gloves	56	5 boxes	50 boxes
Ex-Large Latex Gloves	16	5 boxes	30 boxes
Ex-Small Nitrile Gloves	10	5 boxes	2 boxes
Small Nitrile Gloves	7	5 boxes	2 boxes
Medium Nitrile Gloves	16	5 boxes	2 boxes
Large Nitrile Gloves	12	5 boxes	2 boxes
Ex-Large Nitrile Gloves	23	5 boxes	2 boxes

MILLIPORE SUPPLIES (Room J103)	QTY.	REORDER AMT	
		when AMT=	REORDER:
Q-Gard Pre-Purification Pack	1	2 packs	2 packs
Millipack-40 Filter Unit, Sterile 2 pack	3	2 packs	2 packs
Quantum EX (Organex) Ultrapure Ctrg	0	2 ctrg	2 ctrg
Replacement UV Lamp	3	0 lamps	1 lamp

Eric - Solvents

CHEMICALS (Rooms J116 & J117)	J-WING (FULL BOTTLES) QTY.	REORDER AMT		Max. Reorder Amt. Pre-approved w/o HZ Sign Off
		when AMT =	REORDER:	
Acetonitrile (Optima) ERG	12	4 bottles	8 bottles (4/case)	2 Cases
Acetone (Optima) ERG	6	4 bottles	4 bottles (4/case)	2 Cases
Hexane (Optima) ERG	4	4 bottles	4 bottles (4/case)	2 Cases
Methanol (Optima) ERG	7, 1HPLC	4 bottles	4 bottles (4/case)	2 Cases
Methylene Chloride (Optima) ERG	3	8 bottles	4 bottles (4/case)	4 Cases
Methylene Chloride (Re-distilled)	0	-	-	-
Sodium Sulfate ERG	4	2 bottles	4 bottles (4/case)	4 Cases
Hydrochloric Acid (Trace) JD	7	2 bottles	6 bottles (6/case)	1 Cases
Nitric Acid (Trace) JD	8	2 bottles	6 bottles (6/case)	1 Cases
Sulfuric Acid (Trace)	3	2 bottles	6 bottles (6/case)	1 Cases
pH buffer 4 RC	2	1 bottles	4 bottles (1 case)	1Cases
pH buffer 7 RC	4	1 bottles	4 bottles (1 case)	1 Cases
pH buffer 10 RC	2	1 bottles	4 bottles (1 case)	1 Cases
Drierite	12 3 reused	6 bottles	36 bottles (3 cases)	3 Cases

1

GAS CYLINDERS (Room J115)	NO. CYLINDERS IN BANKS (R/L)	MANIFOLD PRESSURE (R/L)	NO. CYLINDERS FULL NOT ON MANIFOLD	NO. CYLINDERS EMPTY	REORDER AMT		Max. Reorder Amt. Pre-approved w/o HZ Sign Off
					when AMT =	REORDER	
UHP Air JC/JG	-	-	1	0	1	1	5
Argon (Liquid) JC/JG	2/2	110 - 170	1	0	0	1	4
Argon (Gas) JC/JG	-	-	1	0	2	1	1
Helium JC/JG	6/6	500 – 2500	8	1	6	10	18
UHP Hydrogen JC/JG	-	-	0	0	0	1	HZ Signoff Always Required
Nitrogen gas (#051) JC/JG	6/6	100 - 500	4	0	3	2	30
Oxygen JC/JG	-	-	1	0	0	1	1
Argon Methane JC/JG	-	-	3	1	3	2	4
Hydrogen/Argon JC/JG	-	-	0	0	0	1	1

Chemical Inventory Form
Effective Date 2/20/08 JLS

An inventory of the chemical supplies and gases that are commonly used in analysis was completed on_____.
The following tables list the chemicals, supplies and gases foundin the J-WING storage area.

DRY GOODS (Room J103)	QTY.	REORDER AMT	
		when AMT =	REORDER:
Bulk Towels SG informs MaryP with part #	100	40 packs	100 packs (1 case=10 packs)
KIM Wipes (small box) SG informs JD.	379	30 boxes	120 boxes (1 case=60 boxes)
KIM Wipes (Large Box) SG informs JD.	12	15 boxes	45 boxes (1 case=15 boxes)
Glass disposal boxes Skip monitors and orders	15	6 boxes	24 boxes (1 pack=6 boxes)
5 Gallon Drums Skip monitors and orders	16	10 drums	36 drums
Pipette tips (200 - 1000 ul) RC	15	10 boxes	50 boxes
Pipette tips (0.5 - 200 uL) RC	21	10 boxes	50 boxes
Pipette tips (1 - 5 ml) RC	13	10 boxes	50 boxes
9" disposable Pasteur pipettes ERG	5	2 boxes	4 boxes (1 case=4 boxes)
5 3/4" disposable Pasteur pipettes ERG	5	2 boxes	4 boxes (1 case=4 boxes)
Small Latex Gloves RC/JD	13	5 boxes	30 boxes
Medium Latex Gloves RC/JD	32	5 boxes	50 boxes
Large Latex Gloves RC/JD	11	5 boxes	50 boxes
Ex-Large Latex Gloves RC/JD	19	5 boxes	30 boxes
Ex-Small Nitrile Gloves ERG	15	5 boxes	2 boxes
Small Nitrile Gloves ERG	14	5 boxes	2 boxes
Medium Nitrile Gloves ERG	16	5 boxes	2 boxes
Large Nitrile Gloves ERG	13	5 boxes	2 boxes
Ex-Large Nitrile Gloves ERG	23	5 boxes	2 boxes

MILLIPORE SUPPLIES (Room J103)	QTY.	REORDER AMT	
		when AMT=	REORDER:
Q-Gard Pre-Purification Pack	1	2 packs	2 packs
Millipack-40 Filter Unit, Sterile 2 pack	3	2 packs	2 packs
Quantum EX (Organex) Ultrapure Ctrg	0	2 ctrg	2 ctrg
Replacement UV Lamp	3	0 lamps	1 lamp

Mon — Frid — WD #1
SAT — Frid. — WD #2

Dimock GW Site

1/20/2012

Analytical Area	Primary Chemist	Assistance	Peer-review	Alt Peer Review	Alt Peer Review
Anions	Ron	John	Norman	John	Joe
Glycols*	Jennie**	_____	Sue W		
Metals*	Joe/Robin**	Joe/Robin	Joe/Robin	Joe	
SVOCs*	Eric**	Kevin P/Stevie	Kevin P	Stevie	
TDS/TSS	John	ESAT?	Sue G		
VOAs	Sue	Peggy	Peggy		
Total Phosphorus					
Nitrate/Nitrite	John	ESAT?			
Total Nitrogen	John	ESAT?			
O&G	Ron	John			
Alcohols	Adam**				
*expideted TATs	**possible comptime needed				

Tasks	Primary	Backup			
Prelim Data Review	Peer-Reviewer	Joe S			
Prelim Data Submission	Cindy?	KevinM?			
Communications internal	Stevie**	Mike M			
Communications external (Regional Labs)	Stevie/Cindy	Mike M			
Communications to NAREL	Fred				
Final Report Consolidation	Robin	Anching			
Final Report Review	Cindy	_____		Sue	
Sample Receipt/Login	Kevin	John/ESAT	John	Robin	
Formal Communications/external EPA	Bonnie				

Dimock Analytical Notes

1/20/2012

DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT

Expedited Preliminary Data Needs (Section 10.0 of Sampling QA/QC Work Plan)

Parameter	Lab	TAT	Method	Sample Prep Time	Analysis/Review Time
bis(2iethylhexyl)phthalate (DEHP)	R3	< 5 days	OLC03.2 modified	2 days	1 day
2-methoxyethanol	R3	< 5 days	8015B	2 days	1 day
2,2-oxybisethanol (diethylene glycol)	R3	< 3 days	8321 modified	None	1 day
triethylene glycol	R3	< 3 days	8321 modified	None	1 day
aluminum	R3	< 3 days	200.7/200.8	1 day	1 day
arsenic	R3	< 3 days	200.7/200.8	1 day	1 day
lithium	R3	< 3 days	200.7/200.8	1 day	1 day
manganese	R3	< 3 days	200.7/200.8	1 day	1 day
sodium	R3	< 3 days	200.7/200.8	1 day	1 day
iron	R3	< 3 days	200.7/200.8	1 day	1 day
methane	R9	< 5days	RSK-175		
Coliform bacteria	Tier IV		SM922B/SM 9215B		
ethylene glycol	Tier IV		8015M		

Dimock Residential GW Site - SAP Methods

Cynthia Caporale to: Richard Rupert 01/20/2012 04:57 PM

Cc: Kevin Martin, Stevie Wilding, "Nance, Gene", "Graves, Suddha", Richard Bauer, Cynthia Metzger, Fred Foreman

From: Cynthia Caporale/ESC/R3/USEPA/US

To: Richard Rupert/R3/USEPA/US

Cc: Kevin Martin/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US, "Nance, Gene" <Gnance@TechLawInc.com>, "Graves, Suddha" <Sgraves@TechLawInc.com>, Richard Bauer/R9/USEPA/US@EPA, Cynthia Metzger/ESC/R3/USEPA/US@EPA, Fred

Rich,

Yesterday we received an updated Table 1 and Table 2 from the SAP, which identifies the specific parameter list and methods. Stevie sent an email clarifying the changes to the Tables, which were confirmed with you during our discussions this week. Let me know if we have inaccurately captured these changes.

- PAH SIM has been removed as a separate analysis since the quantitation limit (QL) by SVOC CLP-equivalent method is 5ppb. Values below the QL and above the method detection limit (MDL) will be reported as estimated. A separate sample bottle will not be collected for SIM (or do you want a sample bottle collected just in case?).
- Ethylene glycol will need to be analyzed by a commercial laboratory since a QL below 50ppm was not reached
- R9 will be analyzing for dissolved gases (methane, ethane, ethene) but not butane and propane. After talking with Ralph Ludwig/ADA these two parameters are not critical but are helpful for determining the type of methane. Ethane can also provide indication on type of methane.
- Total Phosphorus is only being analyzed if we see orthophos.
- 2-methoxyethanol is being analyzed by both GC/MS and LC/MS/MS.
- 1-methylnapthalene has been added to the list of compounds for SVOCs.
- Region 3 Lab has confirmed acceptance for alcohols and O&G.

Also, would it be possible for TechLaw to provide us with an updated analyte list with QLs and desired action limits (MCLs, Risk levels)?

Cindy

Cynthia Caporale, Chief
OASQA Laboratory Branch
U.S. EPA Region III
Environmental Science Center
Fort Meade, MD
(410) 305-2732
Fax: (410) 305-3095

Residential Well Sampling QA/QC Work Plan

Dimock Residential Groundwater Site

Dimock, Susquehanna County, Pennsylvania
TDD No: TL01-11-12-001
Contract No: EP-S3-10-04

January 9, 2012

TechLaw

EPA Region III

START IV - West

Superfund Technical Assessment and Response Team

Submitted to: Richard Fetzer, On-Scene Coordinator
United States Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103

Sampling QA/QC Work Plan
Dimock Residential Groundwater Site
Dimock, Susquehanna County, Pennsylvania

Prepared for:

U.S. Environmental Protection Agency
Region III
Philadelphia, PA

EPA Contract No.	: EP-S3-10-04
TDD No.	: TL01-11-12-001
EPA Work Assigner	: Richard Fetzer
Date Prepared	: January 9, 2012
Prepared by	: TechLaw, Inc.

TABLE OF CONTENTS

1.0 INTRODUCTION

On December 19th, 2011, EPA Region III On-Scene Coordinators (OSC) Richard Fetzer tasked TechLaw, Inc. (TechLaw) Superfund Technical Assessment and Response Team (START) to perform a removal site evaluation at the Dimock Residential Groundwater Site (site) located at or near Pennsylvania (PA) Route 29 in Dimock, Susquehanna County, Pennsylvania. The purpose of the assessment is to provide information to EPA to assist in determining if residential home wells have been impacted by nearby gas well installation and development activities. Sampling activities will include the collection of residential home well groundwater samples and surface water samples. These sampling activities will be conducted under Technical Direction Document (TDD) No. TL01-11-12-001, START Contract No. EP-S3-10-04.

2.0 SITE DESCRIPTION

The Dimock Residential Groundwater Site is located in the rural community of Dimock Township in northeastern Pennsylvania (pop. 1,497 – 2010 Census). Degradation of drinking water and surface water quality from contamination claimed to be associated with Marcellus shale drilling and hydraulic fracturing (a.k.a. fracking) operations has been reported by local private well owners. Privately owned wells constitute the primary source of drinking water for residents in the area. Drilling and production activities involving deep shale gas extraction is prevalent throughout Susquehanna County.

The site includes affected and potentially affected media, namely ground water and surface waters, in the rural area surrounding the intersection of State Route 29 and County Route 2024 in Dimock Township. The coordinates for this location are 41.746411 north latitude, 75.898498 west longitude. Surface waters in the area enter tributaries of Burdick Creek located east/southeast from the site. Burdick Creek flows to Meshoppen Creek also located east/southeast from the site. Meshoppen Creek flows southwest and confluences the Susquehanna River at Meshoppen, PA. Surface water impoundments and/or ponds and lakes are observed in aerial photos to be present near the site. Topographic relief in the vicinity of the site is approximately 400 feet ranging from approximately 1,100 feet to 1,500 feet above mean sea level (amsl). The site is located within the glaciated low plateaus section of the Appalachian Plateaus Province. Surficial bedrock is comprised of the Devonian Catskill Formation having sandstone, siltstone, shale, mudstone and conglomerate lithology.

The Pennsylvania Ground Water Information System database (PAGWIS) identifies 44 ground water withdrawal wells within a 2-mile radius of the site, although more wells are likely to be present. Most of the wells recorded in the PAGWIS are used for domestic purposes. Depths of 19 of these wells are recorded ranging from 125 to 700 feet deep with a median depth of about 250 feet. Yields from 42 of the wells are recorded as ranging from 1-50 gallons per minute (gpm) with a median yield of 13.7 gpm.

3.0 BACKGROUND

Since 2009, the site has received widespread publicity beginning with reports of methane migration into local domestic water supplies following Marcellus Shale drilling

operations in the area. Ground water sampling activities have also identified the presence of other organic and inorganic contaminants in the private-use wells which may potentially be associated with nonconventional deep shale drilling activities. The origin of the contaminants has not been fully determined.

4.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

EPA On-Scene Coordinator Richard Fetzer will provide overall direction to TechLaw (START) staff concerning project sampling requirements, objectives, and schedule. The START Site Leader is the primary point of contact with the EPA OSC. The Site Leader is responsible for the development and completion of the Sampling QA/QC Work Plan, project team organization, and supervision of all project tasks, including reports and deliverables.

5.0 PROJECT DESCRIPTION

5.1 Objectives

The objective of the sampling activity is:

- To assess for the presence and origin of substances that may present a threat to the health of persons ingesting, contacting or engaging in typical residential or recreational uses of groundwater or surface water. The analytical methods selected are based in part on contaminants that may be present due to the natural gas exploration, drilling or hydraulic fracturing activities located in the region.

5.2 Scope of Work

The scope of work includes collection of approximately forty to sixty residential home well samples in the vicinity of Dimock Township. Tap water samples will be collected at homes where access has been granted to EPA officials by property owners. Additionally, it is anticipated that as many as twelve surface water samples may be collected from nearby water bodies.

6.0 DATA USE OBJECTIVES

The following data quality objectives apply to this project:

Program Area	Sampling Objective	Data Type
Removal	Determine presence/extent of contamination	Definitive

7.0 SAMPLING APPROACH AND ANALYTICAL PARAMETERS

Table 1, Field QC and Sampling Summary and Table 2, Sample Analytical Requirements Summary, include a summary of the numbers of samples, matrices, analytical parameters/methods, quality control (QC) samples, sample preservation, holding times, and containers. Samples will be collected using certified pre-cleaned sample bottles.

7.1 Residential Home Wells

Residential well samples will be collected in accordance with the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) No. 2007 (ERT, 1995). Samples are anticipated to be collected from a valve closest to the well head (wellhead sample) and from the kitchen faucet (tap sample) within each home. Inspection of the water system may be required to identify the appropriate valve sampling location and to determine if it is downstream or upstream of any treatment apparatus. A water sample will be collected from the valve closest to the wellhead first and the sample from the kitchen faucet last.

Wellhead Sample

1. For the sample closest to the wellhead, the spigot will first be examined to determine if it is equipped with an aerator. If the spigot is equipped with an aerator, it shall be removed before purging. A garden hose will be connected to the spigot to direct the purge water away from the home. The spigot will be allowed to purge for a target time of 1 hour. The volume of the purge water will be measured periodically using a stop watch and a large graduated cylinder or equivalent container. Once the target time of 1 hour has been reached, water quality parameters will be recorded using an YSI 556 water quality meter or equivalent that is equipped with data logging capability and flow-through cell. The flow-through cell will be connected to the spigot using a dedicated, clean adapter and flexible tubing. Additionally, water quality parameters will be measured and recorded on field data sheets at approximately 3-5 minute intervals (in addition to instrument data logging) to determine when parameters stabilize. Stabilization will be achieved after all parameters have stabilized for three consecutive readings using the following criteria:

   pH $\pm$ 0.1 unit
   Specific Conductance $\pm$ 3%
   Dissolved Oxygen $\pm$ 10%
   Oxidation Reduction Potential $\pm$ 10 mV
   Temperature $\pm$ 3%

   These criteria are initial guidelines; professional judgment in the field will be used to determine on a well-by-well basis when stabilization occurs.

2. When stabilization is achieved a dissolved gas sample will be collected first in the sequence of samples. The water quality instrument, flow-through cell and tubing

will be removed from the spigot. A new clean length of tubing will be attached to the adapter. The sample container will be submerged in a new, clean and dedicated plastic bucket containing the sample media in order to prevent exposure of the sample to the atmosphere. (See attached Isotech procedure titled "Collection of Ground Water Samples from Domestic and Municipal Water Wells for Dissolved Gas Analysis").

3. Once the dissolved gas sample is collected, the pre-made adapters will be removed and a 1-L HDPE container will be filled to perform field screening. Field measurements will consist of turbidity, alkalinity, ferrous iron, and dissolved sulfide. Turbidity (Standard Method 180.1) will be measured using a HACH 2100Q portable turbidimeter (or equivalent instrument). Alkalinity will be measured by titrating ground water with 1.6N H2S04 to the bromcresol green-methyl red endpoint using a HACH titrator (HACH method 8203, equivalent to Standard Method 23208 for alkalinity). Ferrous iron will be measured using the 1, 10 phenanthroline colorimetric method (HACH DR890 spectrometer, HACH method 8146, equivalent to Standard Method 3500-Fe B for wastewater). Dissolved sulfide will be measured using the methylene blue colorimetric method (HACH DR890 spectrometer; HACH method 8131, equivalent to Standard Method 4500-S2-D for wastewater).

4. The VOC, SVOC and remaining organic sample volumes, respectively, will be collected in sequence by directly filling the sample containers from the spigot. After collection of the organics samples, volumes for all the remaining parameters included in Table 1 shall be collected directly from the spigot. Sample volumes for bacteria analysis should be collected last, but if necessary may be moved forward in the order of collection as long as it is taken after all organic samples are collected.

5. For the total metals analysis, a 1-L HDPE container will be filled. An additional 1-L HDPE container will be filled for dissolved metals analysis. This sample will be filtered using a peristaltic pump and an in-line high-capacity (0.45 micron) filter. At least 100 ml of water will be allowed to pass through the filter before the sample is collected.

6. The sample for bacteria analysis will be collected by first using an alcohol swab/wipe to disinfect the sampling port or spigot. Two applications of alcohol will be applied to the spigot, with the first application removing the gross contamination and the second application for final cleaning of the spigot surface. The alcohol will be allowed to evaporate from the spigot surface before sampling proceeds. The spigot will be turned on to flush any residue from the spigot surface before collection of the sample occurs. During sample collection, care will be made to not touch the mouth of the bottle to the spigot.

7. At several initial sample locations, a 1-L HDPE container will be filled and field-screened for turbidity, alkalinity, ferrous iron, and dissolved sulfide to evaluate changes in water quality across the sampling period.

Tap Sample

1. Once the wellhead sample is collected a sample will then be collected from the kitchen faucet (tap sample). The faucet will first be examined to determine if it is equipped with an aerator, which will be removed if present. The faucet will be turned on and allowed to run for approximately 15 minutes to flush any water from within the indoor plumbing.

2. A 1-L HDPE container will be filled to perform field screening in accordance with the procedure noted in item 3 above. Field measurements will consist of turbidity, alkalinity, ferrous iron, and dissolved sulfide.

3. For all other parameters, sample volumes will be collected in similar sequence and in general accordance with the procedures outlined for well head samples stated above. Samples for dissolved gas analysis will not be collected at the tap.

4. At several initial sample locations, a 1-L HDPE container will be filled and field-screened for turbidity, alkalinity, ferrous iron, and dissolved sulfide to evaluate changes in water quality across the sampling period.

All samples will be placed on ice after collection and will be brought to the sample management trailer to be prepared for shipment to approved laboratories.

Analytical services will be coordinated through EPA and include using the EPA Regional Laboratory, the EPA Contract Laboratory Program (CLP) and/or Tier IV subcontracted laboratory services through TechLaw.

7.2 Surface Water Sampling

Up to twelve surface water samples will be collected from locations near the site. The surface water samples will be collected in accordance with ERT SOP No. 2013, utilizing the direct method (ERT, 1994). Surface water sample media will be collected directly into laboratory certified pre-cleaned sample bottles as specified in Table 2. All samples will be placed on ice after collection. The analyses to be conducted on the surface water samples are summarized in Table 1.

Analytical services will be coordinated through EPA and include using the EPA Regional Laboratory, the EPA Contract Laboratory Program (CLP) and/or Tier IV subcontracted laboratory services through TechLaw.

7.3 Sample Identification Numbers

7.3.1 CLP Sample Numbers

Samples to be analyzed by CLP laboratories will be assigned CLP sample numbers (Nos.) in addition to Station Location Numbers. The CLP sample Nos.

will be automatically assigned by the Forms II Lite™ software. The sample number format will be as follows:

C#### where;

C indicates that the sample is to be analyzed under a CLP organics SOW.

indicates numbers that will be sequentially assigned as the sample data are entered into the Forms II Lite™ program.

7.3.2 Station Location Numbers

Sample Station Location numbers will be assigned by the sampling team to correspond with the location and the type of sample collected. The sample station location No. format will be as follows:

XX##-PF, where XX is:

RW = a ground water sample from a Dimock residential well
SW = a surface water sample
TB = trip blank
FB = field blank
EB = equipment blank
F = indicates a sample is filtered for metal analysis
P = indicates a post filtration sample

and where ## is:

= the unique identifier for each residential well sampled. This identifier will be related in a separate database to the specific residence being sampled.

7.3.3 DAS Sample Numbers

Samples to be analyzed under the Delivery of Analytical Services (DAS) program will receive a DAS sample number in addition to the station location numbers. Samples analyzed by the EPA OASQA laboratory are under the DAS program. The DAS sample number will be assigned as follows:

R3###-##, where:

R3### = the Region-assigned DAS project number; and
-## = the sequential number of the sample as collected.

7.4 Sampling Equipment and Decontamination

Dedicated, disposable sampling equipment will be used by TechLaw whenever possible.

7.5 Investigation Derived Wastes

TechLaw field team members will make every effort to minimize the generation of investigation-derived wastes (IDW) throughout the field event. Purge water for residential home well samples will be discharged in accordance with the Groundwater Monitoring and Maintenance Manual (PADEP, 2001). Disposable personal protective clothing and/or any sampling equipment generated during field activities will be bagged in opaque plastic garbage bags, and disposed of appropriately.

8.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROCEDURES

8.1 Quality Control of Field Activities

The START Site Leader is responsible for ensuring that sample quality and integrity are maintained in accordance with the QA/QC Procedures, and that the sample labeling and documentation is performed as described in Section 8.2 of this sampling plan.

8.2 Sample Documentation

All sample documentation will be completed legibly using indelible black or blue ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing and dating the error.

At each sampling location GPS coordinates will be collected using a GPS unit. These coordinates are to be recorded on the field data sheet or in the field logbook. The field data sheet will be used to document pertinent field screening measurements and sample information. Photographs of each house and each sampling spigot/faucet will be collected. The date and time stamp option will be selected (if available) on each camera. The data logging option (if available) will be selected on each water quality instrument used.

8.2.1 Field Logbook

The use of field logbooks by START for site documentation will be consistent with TechLaw SOP 03-01-04, Maintaining a Field Logbook (TechLaw, 2011a). The field logbook is a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed. All entries will be dated and signed by the individual making the entries, and include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, including site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Identification and description of samples and locations.
9. Subcontractor information and names of on-site personnel.

10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

8.2.2 Sample Labels/Tags QC

Sample labels and tags must clearly identify the particular sample. Required information for sample labels and tags is presented in *Contract Laboratory Program Guidance for Field Samplers*, EPA Publication 540-R-09-03, Final (January 2011) and is provided below.

Sample bottle labels must include the following information:

1. Sample number, as applicable;
2. Case No.;
3. Preservative(s);
4. Analysis/fraction.

Additional information may be included on the label, such as the Station Location (Sampler-assigned sample No.), date and time collected, etc.

Sample tags must include the following information:
1. Sample number, as applicable;
2. Case No.;
3. Station No. and/or Station Location No. (assigned by sampler);
4. Date sample was collected (month, day, and year);
5. Time sample was collected (in military time);
6. Preservative, if any (specify "None" if sample is not preserved);
7. Type of sample (grab or composite);
8. Analysis/fraction requested;
9. Sampler's names/signature(s);

Sample labels will be securely affixed to the sample container. Tie-on sample tags will be properly secured around the neck of the container.

8.2.3 Chain of Custody Record QC

Proper chain of custody will be maintained from the time the sample is collected to its final deposition. Every transfer of custody will be noted and signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they will be stored in a locked container sealed with a Custody Seal.

The Chain of Custody record/EPA Traffic Report (COC/TR) will include (at minimum) the following information:

1. Sample number, as applicable;
2. Case No.;

3. Sample matrices;
4. Specify sample type (grab or composite);
5. Analyses requested;
6. Laboratory turnaround time (TAT) [*Note: This does not include the TAT for data validation. If preliminary results (PR) are required, this must be specified on the COC.*)
7. Preservative(s);
8. Station location identifier (sampler assigned sample No.);
9. Date and time sample collected;
10. Field QC information (identify trip/field/blanks only as "Field QC");
11. Specify samples to be used for laboratory QC (MS/MSD);
12. Name(s) and signature(s) of sampler(s);
13. Signature(s) of any individual(s) with control over samples;
14. Carrier, air bill No., and date of the shipment.

8.2.4 Custody seals QC

Custody seals will be used on all shipping containers used to ship samples. Custody Seals demonstrate that a container has not been tampered with or opened. The individual shipping the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook. EPA Region III does not require custody seals on individual sample containers and has specifically directed samplers not to use custody seals on individual sample containers containing samples for volatile organics analysis (VOA).

8.3 Sample Packaging, Storage, and Shipping

In accordance with TechLaw SOP 04-02-01, Packaging and Shipping Samples – Environmental Procedures (TechLaw, 2011b), and *Contract Laboratory Program Guidance for Field Samplers*, sample containers will be labeled and shipped with a label and sample tag affixed to each container. Samples will be placed in plastic zipping bags. Bagged containers will be placed in appropriate transport containers and the containers will be packed with appropriate absorbent material and bubble wrap. All sample/traffic reports/COC documents will be affixed to the underside of each transport container lid. The lid will be sealed with shipping tape and custody seals affixed to the transport container. Transport containers will be labeled with the origin and destination locations. Regulations for packaging, marking, labeling, and shipping of hazardous materials and wastes are promulgated by the U.S. Department of Transportation (DOT). Air carriers which transport hazardous materials, in particular, Federal Express, require compliance with the current International Air Transport Association (IATA) Regulations, which apply to the shipment and transport of hazardous materials by air carrier. TechLaw will follow IATA regulations to ensure compliance.

8.4 Field QC Samples

Field QC will consist of one field duplicate for every ten field samples, or one per matrix if fewer than ten are collected. Duplicate samples will be documented in the Field Activities Logbook and on the Traffic Report (TR)/COC. The field duplicate will test the reproducibility of sampling procedures and analytical procedures. A trip blank will be collected and included in all coolers shipped that contain samples for VOC and dissolved gas analyses. A field blank will be collected to ensure the cleanliness of sample containers and to ensure that no cross-contamination has occurred during sample collection, preservation, and shipment, as well as in the laboratory. An equipment blank will be collected each day from the in-line filter which is used to collect samples for the dissolved metals analysis.

8.5 Laboratory QC

Laboratory QC will be in accordance with the method requirements.

8.6 Data Validation

Analytical data generated by the EPA OASQA laboratory will be reviewed and validated in accordance with OASQA standard procedures. Other analytical data for organic analyses generated under this Sampling QA/QC Work Plan will be evaluated in accordance with EPA *Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLMO1.0-OLMO1.9)* (September 1994) to Data Validation Level M2, and in accordance with *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses* (April 1993) at the IM2 Level. Validation for the analytical services subcontract arranged through TechLaw will be requested through the EPA ESAT contractor.

9.0 SCHEDULE OF ACTIVITIES

The schedule for the site is projected as follows:

Task Description	Start Date	End Date
Mobilize to area	1/10/12	1/10/12
Sample collection; sample packaging; sample shipping to laboratory	01/11/12	01/30/12

10.0 DELIVERABLES

The following deliverables will be provided under this project:

Analytical Data

- Expedited preliminary data turnaround time (<5 days) will be provided on the following list of compounds/tests:

coliform bacteria	aluminum
bis(2-ethylhexyl) phthalate (DEHP)	arsenic
ethylene glycol	lithium
2-methoxyethanol (Ethylene glycol monomethyl ether)	manganese
methane	sodium
2,2'oxybisethanol (diethylene glycol)	iron
triethylene glycol	

- With exceptions listed above, preliminary unvalidated data will be provided to the EPA OSC within 15 business days after receipt of the samples at the laboratory.
- A Data Validation Report will be provided to the EPA OSC within approximately 21 days of receipt of the laboratory analytical data package by TechLaw.
- TechLaw will incorporate the validated data from this sampling event into a Trip Report and/or After Action Report for the project.

11.0 REFERENCES

EPA, 2011. U.S. Environmental Protection Agency, *Contract Laboratory Program (CLP) Guidance for Field Samplers, Final*, Office of Solid Waste and Emergency Response (OSWER) publication EPA540-R-07-006, Washington, D.C. January.

ERT, 1994. U.S. Environmental Protection Agency Environmental Response Team. Standard Operating Procedure for Surface Water Sampling, SOP# 2013. January 26.

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Isotech, 2011. Isotech Laboratories, Inc., Collection of Ground Water Samples from Domestic and Municipal Water Wells for Dissolved Gas Analysis, Website Accessed December 2011: < http://www.isotechlabs.com/customersupport/samplingprocedures/DGbottle.pdf>

PADEP, 2001. Pennsylvania Department of Environmental Protection, *Groundwater Monitoring Guidance Manual,* Document number 383-3000-001, dated January 1st, 1999, revised December 1st, 2001.

TechLaw, 2011a. TechLaw, Inc., Standard Operating Procedures, *Field Documentation Procedures - Maintaining a Field Logbook, 03-01-04*, Chantilly, VA. March.

TechLaw, 2011b. Standard Operating Procedures, *Packaging and Shipping Samples-Environmental Procedures, 04-02-01,* Chantilly, VA. March.

TABLE 1 - 01/09/12
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Parameter/Method	Matrix	Field Samples	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[4]
			Dup	Trip[1,2] Blanks	Field[1,3] Blanks	Equip[1] Blanks	MS/MSD	
EPA R2 Lab								
Methylene Blue Active Substances (MBAS) (SM 5540C)	drinking water	60	6	-	5	-	-	71
EPA R3 Lab								
Anions: Chloride, Bromide, Fluoride, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	60	6	-	5	-	7	71
Glycols incl. 2-Butoxyethanol (Modified 8321)	drinking water	60	6	-	5	-	4	71
Metals Dissolved: Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Sb, Se, Sn, Sr,Ti, Tl, U, V, Zn (200.7/200.8/245.1)	Filtered drinking water	60	6	-	-	5	7	71
Metals: Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Sb, Se, Sn, Sr,Ti, Tl, U, V, Zn (200.7/200.8/245.1)	drinking water	60	6	-	5	-	7	71
Semi-Volatiles (TCL plus TICs) (OLC03.2)	drinking water	60	6	-	5	-	4	71
Solids, Total Dissolved (TDS) (SM 2540C)	drinking water	60	6	-	5	-	7	71
Solids, Total Suspended (TSS) (SM 2540D)	drinking water	60	6	-	5	-	7	71
Volatiles + Acrylonitrile (TCL + TICs) (OLC03.2)	drinking water	60	6	1	5	-	4	71
Wet Chemistry: - Phosphorus, Total (365.4); - Nitrate/Nitrite (353.2); - Nitrogen; Total (353.2)	drinking water	60	6	-	5	-	7	71
EPA R9 Lab								
Dissolved Gases, Methane, Ethane, Ethene, Propane, Butane (RSK-175, or equiv - EPA R9 SOP 325)	drinking water	60	6	1	5	-	4	71
DRO (8015M, or equiv-EPA R9 SOP 385)	drinking water	60	6	-	5	-	4	71
GRO (8015M, or equiv-EPA R9 SOP 380)	drinking water	60	6	-	5	-	4	71
NAREL								
Alpha Spec (Th-228, Th-230, Th-232) (DOE HASL 300)	drinking water	60	6	-	5	-	-	71
Alpha Spec (U-234, U-235, U-236, U-238) (DOE HASL 300)	drinking water	60	6	-	5	-	-	71
Gamma Spec Bi-212, Bi-214, K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238 (901.1)	drinking water	60	6	-	5	-	-	71
Gross Alpha/Beta (900.0)	drinking water	60	6	-	5	-	-	71
Ra-226 (903.1)	drinking water	60	6	-	5	-	-	71
Ra-228 (904.0)	drinking water	60	6	-	5	-	-	71
TBD								
1-methylnapthalene (8270 or equivalent)	drinking water	60	6	-	5	-	4	71
2-Methoxyethanol (8015B)	drinking water	60	6	-	5	-	4	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	60	6	-	5	-	4	71
Ethylene Glycol (8015M)	drinking water	60	6	-	5	-	4	71
Oil & Grease (HEM) (1664A)	drinking water	60	6	-	5	-	-	71
Tier IV								
Bacteria (fecal & total coliform, HPC) (SM 9222B; SM 9215B w/R2A medium)	drinking water	60	6	-	5	-	-	71
Tier IV								
Isotech - d13C and d2H of methane; - Complete compositional analysis of headspace gas; - Stable isotopes of water (O,H)	drinking water	18	2	-	-	-	-	20

Notes:

1. This QA sample will be an aqueous matrix.
2. Trip blank samples will be collected at a rate of 1 per VOA and 1 per RSK-175 cooler per day
3. Field blank samples will be collected at a rate of 1 per day
4. Estimate based on 5 sampling days

Key:

Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
QA/QC = Quality assurance/quality control
Dup = Duplicate

TABLE 2 - 01/09/12
SAMPLE ANALYTICAL REQUIREMENTS SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Analytical parameter and Method	Matrix	Sample Preservation	Holding Time	Sample Container(s)
EPA R2 Lab				
Methylene Blue Active Substances (MBAS) (SM 5540C)	drinking water	Ice, 4°C	48 hours	One 500-ml HDPE
EPA R3 Lab				
Anions: Chloride, Bromide, Fluoride, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	Ice, 6°C	28 days	One 500-ml HDPE
Glycols incl. 2-Butoxyethanol (Modified 8321)	drinking water	Ice, 6°C	7 days	One 40-ml glass vial (Fill to capacity with no head space)
Metals, Dissolved: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	(filtered) drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 500-ml HDPE
Metals: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 500-ml HDPE
Semi-Volatiles (TCL plus TICs) (OLC03.2)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids
Solids, Total Dissolved (TDS) (SM 2540C)	drinking water	Ice, 6°C	7 days	One 500-ml HDPE
Solids, Total Suspended (TSS) (SM 2540D)	drinking water	Ice, 6°C	7 days	One 500-ml HDPE
Volatiles + Acrylonitrile (TCL + TICs) (OLC03.2)	drinking water	2 drops of 1:1 HCl, pH<2, Ice, 6°C	14 days	Four 40-ml glass vials w/Teflon lined cap (no head space)
Wet Chemistry: - Phosphorus, Total (365.4); - Nitrate/Nitrite (353.2); - Nitrogen; Total (353.2)	drinking water	pH<2, H2SO4, and cool with ice, 4°C	28 days	One 500-ml HDPE
EPA R9 Lab				
Dissolved Gases, Methane, Ethane, Ethene, Propane, Butane (RSK-175, or equiv - EPA R9 SOP 325)	drinking water	pH<2 with HCl and cool with ice, 4°C	7 days	Two 40-ml glass vial
DRO (8015M, or equiv-EPA R9 SOP 385)	drinking water	Ice, 4°C	7 days extract	Two 1-Liter amber glass jars with teflon-lined lids
GRO (8015M, or equiv-EPA R9 SOP 380)	drinking water	pH<2 with HCl and cool with ice, 4°C	14 days	Two 40-ml glass vials (Fill to capacity with no head space)
NAREL				
Alpha Spec (Th-228, Th-230, Th-232) (DOE HASL 300)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Alpha Spec (U-234, U-235, U-236, U-238) (DOE HASL 300)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Gamma Spec Bi-212, Bi-214, K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238 (901.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Gross Alpha/Beta (900.0)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Ra-226 (903.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Ra-228 (904.0)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
TBD				
1-methylnapthalene (8270 or equivalent)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids
2-Methoxyethanol (8015B)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	Ice, 6°C	7 days	Two 40-ml glass vials (Fill to capacity with no head space)
Ethylene Glycol (8015M)	drinking water	Ice, 4°C	7 days	Two 40-ml glass vials (Fill to capacity with no head space)
Oil & Grease (HEM) (1664A)	drinking water	pH<2, H2SO4, and cool with ice, 4°C	28 days	One 1-Liter amber glass jars with teflon-lined lids
Tier IV				
Bacteria (fecal & total coliform, HPC) (SM 9222B; SM 9215B w/R2A medium)	drinking water	Ice, 4°C (.008% Na2S2O3 if residual Cl- present)	6 hours	One 125 ml Pre-sterilized polypropylene
Tier IV				
Isotech - d13C and d2H of methane; - Complete compositional analysis of headspace gas; - Stable isotopes of water (O,H)	drinking water	Ice, 4°C, biocide pill in sample container	6 months	One 1-Liter HDPE

KEY:

°C = degrees Celsius
CLP = Contract Lab Program
CLP = Contract Lab Program
D2H = delta-d deuterium
H2SO4 = Sulfuric Acid
HDPE = High density polyethylene
HNO3 = Nitric Acid
HPC = Heterotrophic Plate Count
ml = milliliter
Na2S2O3 = Sodium Thiosulfate
pH = potential Hydrogen
QL = Quantitation Limit
Sr = Strontium
TCL = Target Compound List
TICs = Tentatively Identified Compounds
ug/L = micrograms per liter

ISOTECH
ISOTECH LABORATORIES INC
1308 Parkland Court Champaign, IL 61821 • (877) 362-4190 • www.isotechlabs.com

Collection of Ground Water Samples from Domestic and Municipal Water Wells for Dissolved Gas Analysis

These instructions are based on sampling protocol created by Anthony Gorody, adopted by the Colorado Oil and Gas Conservation Commission, and are reproduced here with their permission.

The basic technique is to fill a white 5 gallon bucket with source water and then fill the 1 liter sample collection bottle fully immersed in the bucket.

When sampling from a pressurized water system, it is recommended to use an outdoor spigot or other source which bypasses any water treatment systems (i.e. water softeners, etc.).

To collect a sample for isotopic and chromatographic analysis from water that is not effervescent, using 1L bottle with septum cap:

After purging the well, fill the 5 gallon bucket with water. Attach a nozzle and 12" length of ¼ inch diameter tubing to the end of the 5/8 inch hose connected to a faucet. Make sure that the flow rates through the tubing are low. Remove the cap of the 1 L bottle and fill it with water. Once the bottle filled, immerse it in the 5 gallon bucket full of water, keeping the tubing at the bottom of the bottle. Place the bottle at the bottom of the bucket under a head of water, and keep water flowing at a low rate until another 2 volumes of water have been displaced from the bottle. Then slowly lift the tubing out of the bottle and immediately cap it under water. No air should be allowed into the 1 L bottle. When finished, tape the cap to the bottle around the neck, pack the bottle upside down in ice, and ship it overnight.

To collect a headspace gas sample from an effervescent water well:

Fill the bottle with water. Submerge the bottle into the 5 gallon bucket filled with well water and invert it. Insert the ¼ inch tubing into the bottle, increase the flow rate to 2-3 gpm and allow the bubbling gases to displace water in a headspace until 1/4 to 1/2 of the water in the bottle has been displaced. Seal the container under water with the septum and screw cap, tighten it securely. When finished, tape the cap to the bottle around the neck, pack the bottle upside down in ice, and ship it overnight.

Please note Isotech's receiving hours of **Monday thru Friday** 8:00 am to 4:30 pm.
Ship samples to:

Isotech Laboratories, Inc.
1308 Parkland Court
Champaign, IL 61821

These instructions have been provided to simplify the collection of samples for dissolved gas analysis. Although we try to foresee and avoid problems in the field, it is never possible to predict every situation. If you encounter any difficulties, or if any additions or changes in these instructions would be beneficial, please let us know. Isotech Laboratories, Inc. makes no warrantee as to the applicability and/or safety of the procedures described herein.

Accepted 1/18/12

Do it in 3 weeks

U.S EPA Region III Analytical Request Form

Revision 11.09

OASQA USE ONLY			
Control #	**CT5865**	**RAS #**	
DAS#	**R33907**	**NSF #**	
PES #		**Analytical TAT**	**7/days**

Date: 01/04/2012	Site Activity: Removal Site Evaluation			
Site Name: Dimock Residential Groundwater Site		Street Address: PA RT 229 @ 2024		
City: Dimock	State: PA 18847	Latitude:	Longitude:	
Program: Superfund	Acct. #: 2012 T03N303DC6A3TARS00		CERCLIS #: Unknown	
Site ID: N/A	Spill ID: A3TA		Operable Unit:	
Site Specific QA Plan Submitted: ☐ No ☒ Yes	Title: Residential Well Sampling QA/QC Work Plan		**Date Approved: ???**	
EPA Project Leader: Rich Fetzer	Phone#: 215-341-6307	Cell Phone #: 215-341-6307	E-mail: rfetzer@epa.gov	
Request Preparer: Gene Nance	Phone#: 740-867-0968	Cell Phone #: 304-830-1442	E-mail:	
Site Leader: Suddha Graves	Phone#: 304-230-1230	Cell Phone #: 304-830-1441	E-mail:	
Contractor: TechLaw, Inc.		EPA CO/PO: Denise T. Jones/Karen Esposito		

#Samples 71	Matrix: drinking water	Parameter: Total Metals; ICP-AES (Ca*, Fe, K, Mg*, Na)	Method: 200.7/200.8
#Samples 71	Matrix: drinking water	Parameter: Total Metals; CLP TAL; ICP-MS + Li	Method: 200.8
#Samples 71	Matrix: drinking water	Parameter: Total Mercury	Method: 245.1
#Samples 71	Matrix: drinking water	Parameter: Dissolved Metals; ICP-AES (Ca*, Fe, K, Mg*, Na)	Method: 200.7/200.8
#Samples 71	Matrix: drinking water	Parameter: Dissolved Metals; CLP TAL; ICP-MS + Li	Method: 200.8
#Samples 71	Matrix: drinking water	Parameter: Dissolved Mercury	Method: 245.1
#Samples 71	Matrix: drinking water	Parameter: TDS	Method: 2540C
#Samples 71	Matrix: drinking water	Parameter: TSS	Method: 2540D
#Samples 71	Matrix: drinking water	Parameter: Anions -- Sulfate, Chloride, Bromide, Fluoride, Ortho-phosphorus, nitrite/nitrate	Method: 300.0
#Samples 71	Matrix: drinking water	Parameter: Nitrate+Nitrite combined	Method: 353.2
#Samples 71	Matrix: drinking water	Parameter: Total nitrogen	Method: 353.2
#Samples 71	Matrix: drinking water	Parameter: Total P	Method: 365.4
#Samples 71	Matrix: drinking water	Parameter: hardness	Method: 2340B
#Samples 71	Matrix: drinking water	Parameter: carbonate and bicarbonate alkalinities	Method: SM2320B
#Samples 71	Matrix: drinking water	Parameter: oil and grease	Method: 1664A
#Samples 71	Matrix: drinking water	Parameter: Alcohols: methanol, ethanol, propanol, 1-butanol, 2-butanol	Method: 8015D

#Samples 71	Matrix: drinking water	Parameter: Gylcols + 2-Butoxyethanol	Method: Method 8321M
#Samples 71	Matrix drinking water	Parameter: VOC + acrylonitrile +TICs + 2-methoxyethanol	Method: CLP OLC03.2
#Samples 71	Matrix: drinking water	Parameter: SVOC + TICs + 2-methoxyethanol + 1-methylnapthalene	Method: CLP OLC03.2
#Samples 71	Matrix: drinking water	Parameter: ethylene glycol	Method: 8015D

Ship Date From: Jan 10, 2012	Ship Date To: Jan 20, 2012	Org. Validation Level M3	Inorg. Validation Level IM2

Unvalidated Data Requested: ☒ No ☐ Yes If Yes, TAT Needed: ☐ 24hrs ☐ 48hrs ☐ 72hrs ☒ 7days ☒ Other (Specify) 5 days

Validated Data Package Due: ☐ 14 days ☐ 21 days ☒ 35 days ☐ 42 days ☐ Other (Specify)

Electronic Data Deliverables Required: ☐ No ☒ Yes (EDDs will be provided in Region 3 EDD Format) if available

Special Instructions: **TICs required for VOC and SVOC analysis.**
Samples will be screened for orthophosphorus and based on screening results -- samples will be analyzed for Total Phosphorus.
Request Preliminary Results (PRs) or expedited TATs for the following parameters, if feasible: bis(2-ethylhexyl)phthalate (SVOCs); 2-methoxyethanol; ethylene glycol; triethylene glycol and diethylene glycol (glycols analysis); and Al, As, Li, Mn, Na, and Fe (total metals analysis).

FORM ARF- 03/05

Sampling /Shipping Mon

Samples Recieve on Tues. from 4-5 homes

U.S EPA Region III Analytical Request Form

Revision 11.09

OASQA USE ONLY			
Control #	CT5865	RAS #	
DAS#	R33907	NSF #	
PES#		Analytical TAT	7 days

Date: 01/12/2012	Site Activity: Removal Site Evaluation			
Site Name: Dimock Residential Groundwater Site		Street Address: PA RT 229 @ 2024		
City: Dimock	State: PA 18847	Latitude:		Longitude:
Program: Superfund	Acct. #: 2012 T03N303DC6A3TARS00		CERCLIS #: Unknown	
Site ID: N/A	Spill ID: A3TA		Operable Unit:	
Site Specific QA Plan Submitted: ☐ No ☒ Yes	Title: Residential Well Sampling QA/QC Work Plan			Date Approved: January 8, 2012
EPA Project Leader: Rich Fetzer	Phone#: 215-341-6307	Cell Phone #: 215-341-6307		E-mail: fetzer.richard@epa.gov
Request Preparer: Gene Nance	Phone#: 740-867-0968	Cell Phone #: 304-830-1442		E-mail: gnance@techlawinc.com
Site Leader: Suddha Graves	Phone#: 304-230-1230	Cell Phone #: 304-830-1441		E-mail: sgraves@techlawinc.com
Contractor: TechLaw, Inc.		EPA CO/PO: Denise T. Jones/Karen Esposito		

#Samples 71	Matrix: drinking water	Parameter: Total Metals (ICP-AES/ICP-MS)	Method: 200.7/200.8
#Samples 71	Matrix: drinking water	Parameter: Dissolved Metals; (ICP-AES/ICP-MS)	Method: 200.7/200.8
#Samples 71	Matrix: drinking water	Parameter: Total Mercury	Method: EPA 245.1
#Samples 71	Matrix: drinking water	Parameter: Dissolved Mercury	Method: EPA 245.1
#Samples 71	Matrix: drinking water	Parameter: TDS	Method: SM 2540C
#Samples 71	Matrix: drinking water	Parameter: TSS	Method: SM 2540D
#Samples 71	Matrix: drinking water	Parameter: Gylcols, 2-Butoxyethanol and 2-methoxyethanol	Method: Method 8321 (Modified) SW
#Samples 71	Matrix: drinking water	Parameter: Alcohols	Method: SM 8015D
#Samples 71	Matrix: drinking water	Parameter: Anions	Method: EPA 300.0
#Samples 71	Matrix: drinking water	Parameter: Nitrate+Nitrite combined	Method: EPA 353.2 (Modified)
#Samples 71	Matrix: drinking water	Parameter: Total Nitrogen	Method: EPA 353.2 (Modified)

#Samples 71	Matrix: drinking water	Parameter: Total Phosphorus	Method: 365.4 (Modified)
#Samples 71	Matrix: drinking water	Parameter: VOC (plus Acrylonitrile)	Method: CLP OLC03.2 includes TICs
#Samples 71	Matrix: drinking water	Parameter: SVOC (plus 1-methylnaphthalene and 2-methoxyethanol)	Method: CLP OLC03.2 includes TICs
#Samples 71	Matrix: drinking water	Parameter: Oil & Grease	Method: EPA 1664A (or equivalent)
Ship Date From: Jan 23, 2012	Ship Date To: Feb 29, 2012	Org. Validation Level M3	Inorg. Validation Level IM2

Unvalidated Data Requested: ☐ No ☒ Yes If Yes, TAT Needed: ☐ 24hrs ☐ 48hrs ☐ 72hrs ☒ 7days ☐ Other (Specify) **See comments for PRs/expedited TATs**

Validated Data Package Due: ☐ 14 days ☐ 21 days ☒ 35 days ☐ 42 days ☐ Other (Specify)

Electronic Data Deliverables Required: ☐ No ☒ Yes (EDDs will be provided in Region 3 EDD Format) if available

Special Instructions:
The RLs/QLs same as Routine Reporting Levels listed in FM Lab Analytical Capabilities Guide.

TICs required for VOC and SVOC analysis.

Samples will be screened for Orthophosphorus and based on screening results -- samples will be analyzed for Total Phosphorus.

Request Preliminary Results (PRs)/expedited TAT of **5 days** for the following parameters, if feasible:
(SVOCs) bis(2-ethylhexyl)phthalate and 2-Methoxyethanol
(Glycols) Ttriethylene glycol and Diethylene glycol and 2-Methoxyethanol
(Total Metals) Al, As, Li, Mn, Na, and Fe.

FORM ARF- 03/05

Dimock Groundwater Site – Summary of Lab Efforts

1/19/2012

Analytical Parameters

Table 1 from Sampling Plan is complete. Latest version is on I: directory

R3 lab – Metals, VOAs, SVOCs, Anions, TP, NO2/NO3, TDS/TSS, Glycols, Alcohols, O&G

R9 lab – GRO/DRO, dissolved gases (methane/ethane); butane and propane may be issue

R2 lab – MBAS; backup SVOCs

R6 lab – Ethylene Glycol (still need confirmation)

R1 lab – backup SVOCs

R10 – also available as backups

NAREL – Rad

Techlaw/T4 – micro, ISOTECH methods

Methods/Analytes

PAH QLs acceptable at 5ppb with reporting down to method detection limit (1ppb or below); those results below quantitation limit will be qualified estimated

2-methoxyethanol – will analyze using both GC/MS and LC/MS/MS

Ethylene glycol - planning analyzed using GC/MS (need R6 confirmation); need QL confirmed

Data/Reporting

Data will be entered into SCRIBE. R9 and R3 are prepared to generate SEDD deliverables which would be consistent for all labs. R2 will be submitting EDD in excel-type format.

All preliminary results and reports will be sent to Rich Rupert (cc: Gene Nance/START and Cindy Caporale – are there others to include?)

Analytical Request/Logistics

All request forms submitted.

Stevie compiled lab contact and address information for shipping.

Status of Sampling

START is mobilizing on Monday with first round of sampling expected Monday and labs receiving samples on Tuesday.

TABLE 1 - 1/10/12
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Fort Meade R3 Lab

Parameter		Method	Matrix	Total Field and QA/QC Analyses (not including MS/MSD)
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Ba, Sn, Sb, Be, Cd, Co, Tl, V, K	DOC/MDL	200.7/200.8	drinking water	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Ba, Sn, Sb, Be, Cd, Co, Tl, V, K	DOC/MDL	200.7/200.8	Filtered drinking water	71
Total Mercury	DOC/MDL	245.1	drinking water	71
Dissolved Mercury	DOC/MDL	245.1	Filtered drinking water	71
Solids, Total Dissolved (TDS)	DOC/MDL	2540C	drinking water	71
Solids, Total Suspended (TSS)	DOC/MDL	2540D	drinking water	71
Anions, Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4	DOC/MDL	300.0	drinking water	71
Oil & Grease (HEM)	DOC/MDL	1664A	drinking water	71
Total Phosphorus	DOC/MDL	Brad & Lube 365.4 (Modified)	drinking water	71
Total Hardness by Calculation	DOC/MDL	2340B	drinking water	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol	DOC/MDL	8015D	drinking water	71
Volatiles (TCL plus TICs and Acrylonitrile) (CLP Trace - 0.5 ug/L QL)	DOC/MDL	(OLC03.2)	drinking water	71 + Trip Blanks for Coolers
Ethylene Glycol	On Demand	8015D	drinking water	71
Glycols (incl. 2-Butoxyethanol, and 2-Methoxyethanol)	On Demand	8321 (Modified)	drinking water	71
Total Metals: Sr, Li and U	On Demand	200.7/200.8	drinking water	71
Dissolved Metals: Sr, Li and U	On Demand	200.7/200.8	Filtered drinking water	71
Nitrate/Nitrite as Nitrogen	On Demand	Lachet Quick Chem 10-107-04-01C Analyzed using the manufacture's method that's based on 353.2	drinking water	71
Total Nitrogen	On Demand	Lachet Quick Chem 10-107-04-4-A Analyzed using the manufacture's method that's based on 353.3	drinking water	71
Semi-Volatiles (TCL plus TICs, 1-methylnapthalene and 2-Methoxyethanol) (CLP Trace plus TICS)	On Demand	(OLC03.2)	drinking water	71

Contract No. EP-S3-10-14

TABLE 1 - 1/10/12
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Other Regional EPA Labs

Parameter		Method	Matrix	Total Field and QA/QC Analyses (not including MS/MSD)
Dissolved Gases, Methane, Ethane, & Ethene	EPA R9 Lab	RSK-175 (or equiv--EPA R9 SOP 325)	drinking water	71
DRO	EPA R9 Lab	8015D (or equiv to EPA R9 SOP 380)	drinking water	71
GRO	EPA R9 Lab	8015D (or equiv to EPA R9 SOP 385)	drinking water	71
Methylene Blue Active Substances (MBAS)	EPA R2 Lab	5540C	drinking water	71
Ethylene Glycol (Back up Lab)	EPA R5 Lab or EPA R6 Lab	8015D (or equiv to Region's SOP)	drinking water	71

U.S EPA Region III Analytical Request Form

Revision 11.09

OASQA USE ONLY			
Control #		**RAS #**	
DAS#		**NSF #**	
PES #		**Analytical TAT**	

Date: 01/10/2012	Site Activity: Removal Site Evaluation			
Site Name: Dimock Residential Groundwater Site		Street Address: PA RT 229 @ 2024		
City: Dimock	State: PA 18847	Latitude:		Longitude:
Program: Superfund	Acct. #: 2012 T03N303DC6A3TARS00		CERCLIS #: Unknown	
Site ID: N/A	Spill ID: A3TA		Operable Unit:	
Site Specific QA Plan Submitted: ☐ No ☒ Yes	Title: Residential Well Sampling QA/QC Work Plan			Date Approved: January 8, 2012
EPA Project Leader: Rich Fetzer	Phone#: 215-341-6307	Cell Phone #: 215-341-6307		E-mail: fetzer.richard@epa.gov
Request Preparer: Gene Nance	Phone#: 740-867-0968	Cell Phone #: 304-830-1442		E-mail: gnance@techlawinc.com
Site Leader: Suddha Graves	Phone#: 304-230-1230	Cell Phone #: 304-830-1441		E-mail: sgraves@techlawinc.com
Contractor: TechLaw, Inc.		EPA CO/PO: Denise T. Jones/Karen Esposito		

#Samples 71	Matrix: drinking water	Parameter: Total Metals; ICP-AES (Ca*, Fe, K, Mg*, Na)	Method: 200.7
#Samples 71	Matrix: drinking water	Parameter: Total Metals; CLP TAL; ICP-MS	Method: 200.8
#Samples 71	Matrix: drinking water ✓	Parameter: Total Mercury Yes Sue	Method: 245.1
#Samples 71	Matrix: drinking water	Parameter: Dissolved Metals; ICP-AES (Ca*, Fe, K, Mg*, Na)	Method: 200.7
#Samples 71	Matrix: drinking water	Parameter: Dissolved Metals; CLP TAL; ICP-MS	Method: 200.8
#Samples 71	Matrix: drinking water ✓	Parameter: Dissolved Mercury Yes Sue	Method: 245.1
#Samples 71	Matrix: drinking water ✓	Parameter: TDS Yes John	Method: ~~2450C~~ 2540C
#Samples 71	Matrix: drinking water ✓	Parameter: TSS Yes John	Method: ~~2450D~~ 2540D
#Samples 71	Matrix: drinking water	Parameter: Gylcols + 2-Butoxyethanol	Method: Method 8321 (Modified)
#Samples 71	Matrix: drinking water ✓	Parameter: Alcohols On Demand Yes Adam	Method: 8015D 7 days Holding Time
#Samples 71	Matrix: drinking water	Parameter: Anions -- Sulfate, Chloride, Bromide, Fluoride Orthophosphorus	Method: 300.0
#Samples 71	Matrix: drinking water ✓	Parameter: Nitrate+Nitrite combined John Yes (on Demand)	Method: 353.2
#Samples 71	Matrix: drinking water ✓	Parameter: Total nitrogen Yes John (on Demand)	Method: 353.2 (modified)
#Samples 71	Matrix: drinking water	Parameter: Total P	Method: 365.4 (modified)
#Samples 71	Matrix drinking water	Parameter: VOC + acrylonitrile	Method: CLP OLC03.2 includes TICs
#Samples 71	Matrix: drinking water ✓	Parameter: SVOC + 1-methylnaphthalene On Demand Eric	Method: CLP OLC03.2 includes TICs
#Samples 71	Matrix: drinking water ✓	Parameter: Methylene Blue Active Substance	Method: SM 5540C R2 Lab
#Samples 71	Matrix: drinking water	Parameter: Oil & Grease	Method: EPA 1664A (or equivalent)

#Samples 71	Matrix: drinking water ✓		Parameter: Dissolved gases- methane, ethane, ethene, propane, butane	Method: RSK-175(or equiv – EPA R9 SOP 325) R9
#Samples 71	Matrix: drinking water ✓		Parameter: Ethylene glycol (On Demand) Yes Adam	Method: 8015M (or equivalent) → D
#Samples 71	Matrix: drinking water ✓		Parameter: 2-methoxyethanol Jeanne (On Demand)	Method: 8015B (or equivalent) → D
#Samples 71	Matrix: drinking water ✓		Parameter: Gasoline Range Organics (GRO)	Method: 8015M (or equiv – EPA R9 SOP 380) R9
#Samples 71	Matrix: drinking water ✓		Parameter: Diesel Range Organics (DRO)	Method: 8015M (or equiv – EPA R9 SOP 385) R9
Ship Date From: Jan 12, 2012		Ship Date To: Jan 31, 2012	Org. Validation Level M3	Inorg. Validation Level IM2
Unvalidated Data Requested: ☒ No ☐ Yes If Yes, TAT Needed: ☐ 24hrs ☐ 48hrs ☐ 72hrs ☒ 7days ☐ Other (Specify) **See comments for PRs/expedited TATs**				
Validated Data Package Due: ☐ 14 days ☐ 21 days ☒ 35 days ☐ 42 days ☐ Other (Specify)				
Electronic Data Deliverables Required: ☐ No ☒ Yes (EDDs will be provided in Region 3 EDD Format) if available				

Special Instructions:

The RLs/QLs same as Routine Reporting Levels listed in FM Lab Analytical Capabilities Guide.
TICs required for VOC and SVOC analysis.
Samples will be screened for orthophosphorus and based on screening results -- samples will be analyzed for Total Phosphorus.
Request Preliminary Results (PRs) or expedited TATs for the following parameters, if feasible: bis(2-ethylhexyl)phthalate (SVOCs); 2-methoxyethanol; ethylene glycol; triethylene glycol and diethylene glycol (glycols analysis); and Al, As, Li, Mn, Na, and Fe (total metals analysis).

FORM ARF- 03/05

Adam
* can see down to 10ppm RL. However, can only see it on one column

Eric
maybe can see it. Will put curve on the column. → Method is 8015D

It will be a 3-day extraction. → Prep Method 3520C will be done w/ SVOC

Alcohols ← Ethanol, Methanol, 1-prop, 1-but, 2-but

TOT Alk 2320B

Total Hardness SM2340B Calc

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Fort Meade R3 Lab

Parameter		Method	Matrix	Total Field and QA/QC Analyses (not including MS/MSD)
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Ba, Sn, Sb, Be, Cd, Co, Tl, V, K	DOC/MDL	200.7/200.8	drinking water	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Ba, Sn, Sb, Be, Cd, Co, Tl, V, K	DOC/MDL	200.7/200.8	Filtered drinking water	71
Total Mercury	DOC/MDL	245.1	drinking water	71
Dissolved Mercury	DOC/MDL	245.1	Filtered drinking water	71
Solids, Total Dissolved (TDS)	DOC/MDL	2540C	drinking water	71
Solids, Total Suspended (TSS)	DOC/MDL	2540D	drinking water	71
Anions, Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4	DOC/MDL	300.0	drinking water	71
Oil & Grease (HEM)	DOC/MDL	1664A	drinking water	71
Total Phosphorus	DOC/MDL	Brad & Lube 365.4 (Modified)	drinking water	71
Total Alkalinity (HCO3, CO3) in Field	DOC/MDL	2320B	drinking water	71
Total Hardness by Calculation	DOC/MDL	2340B	drinking water	71
pH in Field	NA	9040C	drinking water	71
Glycols incl. 2-Butoxyethanol	On Demand	8321 (Modified)	drinking water	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol DOC/MDL	~~On Demand~~	8015D	drinking water	71
Total Metals: Sr, Li and U	On Demand	200.7/200.8	drinking water	71
Dissolved Metals: Sr, Li and U	On Demand	200.7/200.8	Filtered drinking water	71
Nitrate/Nitrite as Nitrogen	On Demand	Lachet Quick Chem 10-107-04-01C Analyzed using the manufacture's method that's based on 353.2	drinking water	71
Total Nitrogen	On Demand	Lachet Quick Chem 10-107-04-4-A Analyzed using the manufacture's method that's based on 353.3	drinking water	71
Ethylene Glycol goes to R5 - RL	On Demand	8015D	drinking water	71
2-Methoxyethanol Glycol	On Demand	Jessie and 8015D Eric	drinking water	71
Semi-Volatiles (TCL plus TICs) (CLP Trace plus TICS)	On Demand	(OLC03.2)	drinking water	71
1-methylnapthalene not on Glycol	On Demand	8270 or equivalent	drinking water	71
Volatiles Incl. Acrylonitrile (TCL plus TICs) (CLP Trace - 0.5 ug/L QL) DOC/MDL	~~On Demand~~	(OLC03.2)	drinking water	71 + Trip Blanks for Coolers

Contract No. EP-S3-10-14

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY

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Dissolved Gases, Methane, Ethane, & Ethene	EPA R9 Lab	RSK-175 (or equiv--EPA R9 SOP 325)	drinking water	71
DRO	EPA R9 Lab	8015D (or equiv to EPA R9 SOP 380)	drinking water	71
GRO	EPA R9 Lab	8015D (or equiv to EPA R9 SOP 385)	drinking water	71
Methylene Blue Active Substances (MBAS)	EPA R2 Lab	5540C	drinking water	71

Methods for Ground Water and Surface Water Samples

	VOCs					
5030/CLP trace	1,1,1,2-Tetrachloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1,1-Trichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1,2,2-Tetrachloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1,2-Trichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1-Dichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1-Dichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,1-Dichloropropene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,3-Trichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,3-Trichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,4-Trichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2,4-Trimethylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dibromo-3-chloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dibromoethane (EDB)	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dichloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,2-Dichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,3,5-Trimethylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,3-Dichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,3-Dichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	1,4-Dichlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2,2-Dichloropropane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Butanone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Chloroethylvinyl ether	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Chlorotoluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	2-Hexanone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	4-Chlorotoluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	4-Methyl-2-pentanone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Acetone	Ground Water	2 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Benzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromochloromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromodichloromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromoform	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Bromomethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Carbon disulfide	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Carbon Tetrachloride	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chlorobenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chlorodibromomethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chloroethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chloroform	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Chloromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	cis-1,2-Dichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	cis-1,3-Dichloropropene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Cyclohexane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Dibromomethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Dichlorodifluoromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Ethylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Freon 113	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Hexachlorobutadiene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Isopropylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methyl Acetate	Ground Water	1 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methylcyclohexane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methylene Chloride	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Methyl-tert-butyl ether	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	m-Xylene/p-Xylene	Ground Water	1 ug/L	5030/CLP	Surface Water	10 ug/L
5030/CLP trace	Naphthalene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	n-Butylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	n-Propylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	o-Xylene	Ground Water	1 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	p-Isopropyltoluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	sec-Butylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Styrene	Ground Water	1 ug/L	5030/CLP	Surface Water	10 ug/L
5030/CLP trace	tert-Butylbenzene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Tetrachloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Toluene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	trans-1,2-Dichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	trans-1,3-Dichloropropene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Trichloroethene	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L
5030/CLP trace	Trichlorofluoromethane	Ground Water	0.5 ug/L	5030/CLP	Surface Water	5 ug/L

Methods for Ground Water and Surface Water Samples

	VOCs					
5030/CLP trace	Vinyl acetate	Ground Water	0.5 ug/L	**5030/CLP**	Surface Water	5 ug/L
5030/CLP trace	Vinyl chloride	Ground Water	0.5 ug/L	**5030/CLP**	Surface Water	5 ug/L
5030/CLP trace	Acrylonitrile	Ground Water	5 ug/L	**5030/CLP**	Surface Water	5 ug/L

Methods for Surface Water and Ground Water Samples

	SVOC			
OLC03.2/3520C	1,1-Biphenyl	Water	5	ug/L
OLC03.2/3520C	1,2,4,5-Tetrachlorobenzene	Water	5	ug/L
OLC03.2/3520C	2,3,4,6-Tetrachlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4,5-Trichlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4,6-Trichlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dichlorophenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dimethylphenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dinitrophenol	Water	5	ug/L
OLC03.2/3520C	2,4-Dinitrotoluene	Water	5	ug/L
OLC03.2/3520C	2,6-Dinitrotoluene	Water	5	ug/L
OLC03.2/3520C	2-Chloronaphthalene	Water	5	ug/L
OLC03.2/3520C	2-Chlorophenol	Water	5	ug/L
OLC03.2/3520C	2-Methylnaphthalene	Water	5	ug/L
OLC03.2/3520C	2-Methylphenol	Water	5	ug/L
OLC03.2/3520C	2-Nitroaniline	Water	5	ug/L
OLC03.2/3520C	2-Nitrophenol	Water	5	ug/L
OLC03.2/3520C	3,3'-Dichlorobenzidine	Water	5	ug/L
OLC03.2/3520C	3-Nitroaniline	Water	5	ug/L
OLC03.2/3520C	4,6-Dinitro-2-methylphenol	Water	10	ug/L
OLC03.2/3520C	4-Bromophenyl phenyl ether	Water	5	ug/L
OLC03.2/3520C	4-Chloro-3-methylphenol	Water	5	ug/L
OLC03.2/3520C	4-Chloroaniline	Water	5	ug/L
OLC03.2/3520C	4-Chlorophenyl phenyl ether	Water	5	ug/L
OLC03.2/3520C	4-Methylphenol	Water	5	ug/L
OLC03.2/3520C	4-Nitroaniline	Water	5	ug/L
OLC03.2/3520C	4-Nitrophenol	Water	10	ug/L
OLC03.2/3520C	Acenaphthene	Water	5	ug/L
OLC03.2/3520C	Acenaphthylene	Water	5	ug/L
OLC03.2/3520C	Acetophenone	Water	5	ug/L
OLC03.2/3520C	Anthracene	Water	5	ug/L
OLC03.2/3520C	Atrazine	Water	5	ug/L
OLC03.2/3520C	Benzaldehyde	Water	5	ug/L
OLC03.2/3520C	Benzo(a)anthracene	Water	5	ug/L
OLC03.2/3520C	Benzo(a)pyrene	Water	5	ug/L
OLC03.2/3520C	Benzo(b)fluoranthene	Water	5	ug/L
OLC03.2/3520C	Benzo(ghi)perylene	Water	5	ug/L
OLC03.2/3520C	Benzo(k)fluoranthene	Water	5	ug/L
OLC03.2/3520C	Bis(2-chloroethoxy)methane	Water	5	ug/L
OLC03.2/3520C	Bis(2-chloroethyl)ether	Water	5	ug/L
OLC03.2/3520C	Bis(2-chloroisopropyl)ether	Water	5	ug/L
OLC03.2/3520C	Bis(2-ethylhexyl)phthalate	Water	5	ug/L
OLC03.2/3520C	Butyl benzyl phthalate	Water	5	ug/L
OLC03.2/3520C	Caprolactam	Water	5	ug/L
OLC03.2/3520C	Carbazole	Water	5	ug/L
OLC03.2/3520C	Chrysene	Water	5	ug/L
OLC03.2/3520C	Dibenz(a,h)anthracene	Water	5	ug/L
OLC03.2/3520C	Dibenzofuran	Water	5	ug/L
OLC03.2/3520C	Diethyl phthalate	Water	5	ug/L
OLC03.2/3520C	Dimethyl phthalate	Water	5	ug/L
OLC03.2/3520C	Di-n-butyl phthalate	Water	5	ug/L
OLC03.2/3520C	Di-n-octyl phthalate	Water	5	ug/L
OLC03.2/3520C	Fluoranthene	Water	5	ug/L
OLC03.2/3520C	Fluorene	Water	5	ug/L
OLC03.2/3520C	Hexachlorobenzene	Water	5	ug/L
OLC03.2/3520C	Hexachlorobutadiene	Water	5	ug/L
OLC03.2/3520C	Hexachlorocyclopentadiene	Water	5	ug/L
OLC03.2/3520C	Hexachloroethane	Water	5	ug/L
OLC03.2/3520C	Indeno(1,2,3-cd)pyrene	Water	5	ug/L

Methods for Surface Water and Ground Water Samples

	SVOC			
OLC03.2/3520C	Isophorone	Water	5	ug/L
OLC03.2/3520C	Naphthalene	Water	5	ug/L
OLC03.2/3520C	Nitrobenzene	Water	5	ug/L
OLC03.2/3520C	N-Nitrosodimethylamine	Water	5	ug/L
OLC03.2/3520C	N-Nitroso-di-n-propylamine	Water	5	ug/L
OLC03.2/3520C	N-Nitrosodiphenylamine	Water	5	ug/L
OLC03.2/3520C	Pentachlorophenol	Water	5	ug/L
OLC03.2/3520C	Phenanthrene	Water	5	ug/L
OLC03.2/3520C	Phenol	Water	5	ug/L
OLC03.2/3520C	Pyrene	Water	5	ug/L
OLC03.2/3520C	1-Methylnaphthalene*	Water	5	ug/L

Methods for Surface Water and Ground Water Samples

	Glycol			
SW8321 Modified	2-Butoxyethanol	Water	10	ug/L
SW8321 Modified	Di ethylene glycol	Water	25	ug/L
SW8321 Modified	Tri ethylene glycol	Water	25	ug/L
SW8321 Modified	Tetra ethylene glycol	Water	25	ug/L

Methods for Surface Water Samples

Analyte Group	Matrix	Technique	Reference Method	Routine Reporting Levels
Alcohols	Non-potable water	GC-FID	SM 8015D	200 mg/kg
Alkalinity - Total	Non-potable water	Titration	SM 2320B	20 mg/L
Alkalinity - Bicarb/Carb	Non-potable water	Titration	SM 2320B	20 mg/L
Hardness	Non-potable water	ICP + calculation	SM 2340B calc.	3300 ug/L
Inorganic ions - Bromide Chloride Fluoride Ortho-phosphate as P Sulfate as SO4	Non-potable water	Ion Chromatography	EPA 300.0	 0.5 mg/L 0.25 mg/L 0.1 mg/L 0.25 mg/L 0.5 mg/ L
Mercury		Cold Vapor Spectrometry	EPA 245.1	0.2 µg/L
Nitrate/Nitrite as Nitrogen - Total (digested)	Non-potable water	Digestion of all forms of Nitrogen followed by automated colorimetric analysis	EPA 353.2	0.05 mg N/L 1 mg/L
pH - Lab	Non-potable water	Electrometric	SW9040C	NA
Phosphorus - Total	Non-potable water	Colorimetric - automated	EPA 365.4	0.05 mg/L
Residue -TDS	Non-potable water	Gravimetric	SM 2540C	10 mg/L
Residue -TSS	Non-potable water	Gravimetric	SM 2540D	10 mg/L

SM = Standard Methods
SW = SW846 method
EPA = EPA method

Methods for Surface Water and Ground Water Samples

	Metals		
200.7	Aluminum (Al)	Water	200 ug/L
200.7	Antimony (Sb)	Water	60 ug/L
200.7	Arsenic (Ar)	Water	200 ug/L
200.7	Barium (Ba)	Water	200 ug/L
200.7	Beryllium (Be)	Water	5 ug/L
200.7	Boron (B)	Water	50 ug/L
200.7	Cadmium (Cd)	Water	5 ug/L
200.7	Calcium (Ca)	Water	500 ug/L
200.7	Chromium (Cr)	Water	10 ug/L
200.7	Cobalt (Co)	Water	50 ug/L
200.7	Copper (Cu)	Water	25 ug/L
200.7	Iron (Fe)	Water	100 ug/L
200.7	Lead (Pb)	Water	50 ug/L
200.7	Magnesium (Mg)	Water	500 ug/L
200.7	Manganese (Mn)	Water	15 ug/L
200.7	Nickel (Ni)	Water	40 ug/L
200.7	Potassium (K)	Water	2000 ug/L
200.7	Selenium (Se)	Water	200 ug/L
200.7	Silver (Ag)	Water	10 ug/L
200.7	Sodium (Na)	Water	1000 ug/L
200.7	Strontium (Sr)	Water	200 ug/L
200.7	Thallium (Tl)	Water	200 ug/L
200.7	Tin (Sn)	Water	200 ug/L
200.7	Titanium (Ti)	Water	200 ug/L
200.7	Vanadium (V)	Water	50 ug/L
200.7	Zinc (Zn)	Water	20 ug/L
200.8	Aluminum (Al)	Water	30 ug/L
200.8	Antimony (Sb)	Water	2 ug/L
200.8	Arsenic (Ar)	Water	1 ug/L
200.8	Barium (Ba)	Water	10 ug/L
200.8	Beryllium (Be)	Water	1 ug/L
200.8	Cadmium (Cd)	Water	1 ug/L
200.8	Chromium (Cr)	Water	2 ug/L
200.8	Cobalt (Co)	Water	1 ug/L
200.8	Copper (Cu)	Water	2 ug/L
200.8	Lead (Pb)	Water	1 ug/L
200.8	Manganese (Mn)	Water	1 ug/L
200.8	Nickel (Ni)	Water	1 ug/L
200.8	Selenium (Se)	Water	5 ug/L
200.8	Silver (Ag)	Water	1 ug/L
200.8	Thallium (Tl)	Water	1 ug/L
200.8	Uranium (U)	Water	10 ug/L
200.8	Vanadium (V)	Water	5 ug/L
200.8	Zinc (Zn)	Water	2 ug/L

Dimock Groundwater Site – Summary of Lab Efforts

1/6/2012

Analytical Parameters

Table 1 from Sampling Plan is in-progress. Latest version is on I: directory

R3 lab – Metals, VOAs, SVOCS, Anions, TP, N/N, TDS/TSS, Alk, Glycols, Alcohols, O&G

R3 lab – Assessing LC/MS/MS capability to analyze in ppb range for ethylene glycol and 2-methoxyethanol; Assessing GC/MS (SVOCs) to add 1-methylnapthalene

R9 lab – GRO/DRO, dissolved gases (methane/ethane)

R2 lab – MBAS

R6 lab – backup and tech assistance for alcohols

NAREL – Rad, issue with Rn222 in DW

Techlaw/T4 – micro, ISOTECH methods, Rn222?

Gylcol/Alcohol Issues

LC/MS/MS – can not see ethylene glycol and may have issue with 2-methoxyethanol. Jennie is shooting standard for 2-methoxyethanol on Monday.

GC/FTIR – method 8430 includes ethylene glycol so Sue G is testing with standard today

GC/FID – method 8015 – Adam will test the two on GC/FID for presence

GC/MS – 1-methynapthalene standard being ordered. Eric is testing to see if can run as 8270

Data/Reporting

Need to discuss with Rich the data/reporting needs. We are prepared to generate SEDD deliverables which would be consistent for all labs.

Would like R3 lab to be the hub for regional lab support – central location for data packages and communication; samples can be shipped directly to labs by field contractor; contact and address information being compiled today.

Coolers/Bottles

R3 lab can provide some coolers to use for this project but probably don't have enough supply of bottles without further purchases.

Residential Well Sampling QA/QC Work Plan

Dimock Residential Groundwater Site

Dimock, Susquehanna County, Pennsylvania
TDD No: TL01-11-12-001
Contract No: EP-S3-10-04

January 9, 2012

TechLaw

EPA Region III

START IV - West

Superfund Technical Assessment and Response Team

Submitted to: Richard Fetzer, On-Scene Coordinator
United States Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103

Sampling QA/QC Work Plan
Dimock Residential Groundwater Site
Dimock, Susquehanna County, Pennsylvania

Prepared for:

U.S. Environmental Protection Agency
Region III
Philadelphia, PA

EPA Contract No.	: EP-S3-10-04
TDD No.	: TL01-11-12-001
EPA Work Assigner	: Richard Fetzer
Date Prepared	: January 9, 2012
Prepared by	: TechLaw, Inc.

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1.0 INTRODUCTION

On December 19th, 2011, EPA Region III On-Scene Coordinators (OSC) Richard Fetzer tasked TechLaw, Inc. (TechLaw) Superfund Technical Assessment and Response Team (START) to perform a removal site evaluation at the Dimock Residential Groundwater Site (site) located at or near Pennsylvania (PA) Route 29 in Dimock, Susquehanna County, Pennsylvania. The purpose of the assessment is to provide information to EPA to assist in determining if residential home wells have been impacted by nearby gas well installation and development activities. Sampling activities will include the collection of residential home well groundwater samples and surface water samples. These sampling activities will be conducted under Technical Direction Document (TDD) No. TL01-11-12-001, START Contract No. EP-S3-10-04.

2.0 SITE DESCRIPTION

The Dimock Residential Groundwater Site is located in the rural community of Dimock Township in northeastern Pennsylvania (pop. 1,497 – 2010 Census). Degradation of drinking water and surface water quality from contamination claimed to be associated with Marcellus shale drilling and hydraulic fracturing (a.k.a. fracking) operations has been reported by local private well owners. Privately owned wells constitute the primary source of drinking water for residents in the area. Drilling and production activities involving deep shale gas extraction is prevalent throughout Susquehanna County.

The site includes affected and potentially affected media, namely ground water and surface waters, in the rural area surrounding the intersection of State Route 29 and County Route 2024 in Dimock Township. The coordinates for this location are 41.746411 north latitude, 75.898498 west longitude. Surface waters in the area enter tributaries of Burdick Creek located east/southeast from the site. Burdick Creek flows to Meshoppen Creek also located east/southeast from the site. Meshoppen Creek flows southwest and confluences the Susquehanna River at Meshoppen, PA. Surface water impoundments and/or ponds and lakes are observed in aerial photos to be present near the site. Topographic relief in the vicinity of the site is approximately 400 feet ranging from approximately 1,100 feet to 1,500 feet above mean sea level (amsl). The site is located within the glaciated low plateaus section of the Appalachian Plateaus Province. Surficial bedrock is comprised of the Devonian Catskill Formation having sandstone, siltstone, shale, mudstone and conglomerate lithology.

The Pennsylvania Ground Water Information System database (PAGWIS) identifies 44 ground water withdrawal wells within a 2-mile radius of the site, although more wells are likely to be present. Most of the wells recorded in the PAGWIS are used for domestic purposes. Depths of 19 of these wells are recorded ranging from 125 to 700 feet deep with a median depth of about 250 feet. Yields from 42 of the wells are recorded as ranging from 1-50 gallons per minute (gpm) with a median yield of 13.7 gpm.

3.0 BACKGROUND

Since 2009, the site has received widespread publicity beginning with reports of methane migration into local domestic water supplies following Marcellus Shale drilling

operations in the area. Ground water sampling activities have also identified the presence of other organic and inorganic contaminants in the private-use wells which may potentially be associated with nonconventional deep shale drilling activities. The origin of the contaminants has not been fully determined.

4.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

EPA On-Scene Coordinator Richard Fetzer will provide overall direction to TechLaw (START) staff concerning project sampling requirements, objectives, and schedule. The START Site Leader is the primary point of contact with the EPA OSC. The Site Leader is responsible for the development and completion of the Sampling QA/QC Work Plan, project team organization, and supervision of all project tasks, including reports and deliverables.

5.0 PROJECT DESCRIPTION

5.1 Objectives

The objective of the sampling activity is:

- To assess for the presence and origin of substances that may present a threat to the health of persons ingesting, contacting or engaging in typical residential or recreational uses of groundwater or surface water. The analytical methods selected are based in part on contaminants that may be present due to the natural gas exploration, drilling or hydraulic fracturing activities located in the region.

5.2 Scope of Work

The scope of work includes collection of approximately forty to sixty residential home well samples in the vicinity of Dimock Township. Tap water samples will be collected at homes where access has been granted to EPA officials by property owners. Additionally, it is anticipated that as many as twelve surface water samples may be collected from nearby water bodies.

6.0 DATA USE OBJECTIVES

The following data quality objectives apply to this project:

Program Area	Sampling Objective	Data Type
Removal	Determine presence/extent of contamination	Definitive

7.0 SAMPLING APPROACH AND ANALYTICAL PARAMETERS

Table 1, Field QC and Sampling Summary and Table 2, Sample Analytical Requirements Summary, include a summary of the numbers of samples, matrices, analytical parameters/methods, quality control (QC) samples, sample preservation, holding times, and containers. Samples will be collected using certified pre-cleaned sample bottles.

7.1 Residential Home Wells

Residential well samples will be collected in accordance with the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) No. 2007 (ERT, 1995). Samples are anticipated to be collected from a valve closest to the well head (wellhead sample) and from the kitchen faucet (tap sample) within each home. Inspection of the water system may be required to identify the appropriate valve sampling location and to determine if it is downstream or upstream of any treatment apparatus. A water sample will be collected from the valve closest to the wellhead first and the sample from the kitchen faucet last.

Wellhead Sample

1. For the sample closest to the wellhead, the spigot will first be examined to determine if it is equipped with an aerator. If the spigot is equipped with an aerator, it shall be removed before purging. A garden hose will be connected to the spigot to direct the purge water away from the home. The spigot will be allowed to purge for a target time of 1 hour. The volume of the purge water will be measured periodically using a stop watch and a large graduated cylinder or equivalent container. Once the target time of 1 hour has been reached, water quality parameters will be recorded using an YSI 556 water quality meter or equivalent that is equipped with data logging capability and flow-through cell. The flow-through cell will be connected to the spigot using a dedicated, clean adapter and flexible tubing. Additionally, water quality parameters will be measured and recorded on field data sheets at approximately 3-5 minute intervals (in addition to instrument data logging) to determine when parameters stabilize. Stabilization will be achieved after all parameters have stabilized for three consecutive readings using the following criteria:

   pH $\pm$ 0.1 unit
   Specific Conductance $\pm$ 3%
   Dissolved Oxygen $\pm$ 10%
   Oxidation Reduction Potential $\pm$ 10 mV
   Temperature $\pm$ 3%

   These criteria are initial guidelines; professional judgment in the field will be used to determine on a well-by-well basis when stabilization occurs.

2. When stabilization is achieved a dissolved gas sample will be collected first in the sequence of samples. The water quality instrument, flow-through cell and tubing

will be removed from the spigot. A new clean length of tubing will be attached to the adapter. The sample container will be submerged in a new, clean and dedicated plastic bucket containing the sample media in order to prevent exposure of the sample to the atmosphere. (See attached Isotech procedure titled "Collection of Ground Water Samples from Domestic and Municipal Water Wells for Dissolved Gas Analysis").

3. Once the dissolved gas sample is collected, the pre-made adapters will be removed and a 1-L HDPE container will be filled to perform field screening. Field measurements will consist of turbidity, alkalinity, ferrous iron, and dissolved sulfide. Turbidity (Standard Method 180.1) will be measured using a HACH 2100Q portable turbidimeter (or equivalent instrument). Alkalinity will be measured by titrating ground water with 1.6N H2S04 to the bromcresol green-methyl red endpoint using a HACH titrator (HACH method 8203, equivalent to Standard Method 23208 for alkalinity). Ferrous iron will be measured using the 1, 10 phenanthroline colorimetric method (HACH DR890 spectrometer, HACH method 8146, equivalent to Standard Method 3500-Fe B for wastewater). Dissolved sulfide will be measured using the methylene blue colorimetric method (HACH DR890 spectrometer; HACH method 8131, equivalent to Standard Method 4500-S2-D for wastewater).

4. The VOC, SVOC and remaining organic sample volumes, respectively, will be collected in sequence by directly filling the sample containers from the spigot. After collection of the organics samples, volumes for all the remaining parameters included in Table 1 shall be collected directly from the spigot. Sample volumes for bacteria analysis should be collected last, but if necessary may be moved forward in the order of collection as long as it is taken after all organic samples are collected.

5. For the total metals analysis, a 1-L HDPE container will be filled. An additional 1-L HDPE container will be filled for dissolved metals analysis. This sample will be filtered using a peristaltic pump and an in-line high-capacity (0.45 micron) filter. At least 100 ml of water will be allowed to pass through the filter before the sample is collected.

6. The sample for bacteria analysis will be collected by first using an alcohol swab/wipe to disinfect the sampling port or spigot. Two applications of alcohol will be applied to the spigot, with the first application removing the gross contamination and the second application for final cleaning of the spigot surface. The alcohol will be allowed to evaporate from the spigot surface before sampling proceeds. The spigot will be turned on to flush any residue from the spigot surface before collection of the sample occurs. During sample collection, care will be made to not touch the mouth of the bottle to the spigot.

7. At several initial sample locations, a 1-L HDPE container will be filled and field-screened for turbidity, alkalinity, ferrous iron, and dissolved sulfide to evaluate changes in water quality across the sampling period.

Tap Sample

1. Once the wellhead sample is collected a sample will then be collected from the kitchen faucet (tap sample). The faucet will first be examined to determine if it is equipped with an aerator, which will be removed if present. The faucet will be turned on and allowed to run for approximately 15 minutes to flush any water from within the indoor plumbing.

2. A 1-L HDPE container will be filled to perform field screening in accordance with the procedure noted in item 3 above. Field measurements will consist of turbidity, alkalinity, ferrous iron, and dissolved sulfide.

3. For all other parameters, sample volumes will be collected in similar sequence and in general accordance with the procedures outlined for well head samples stated above. Samples for dissolved gas analysis will not be collected at the tap.

4. At several initial sample locations, a 1-L HDPE container will be filled and field-screened for turbidity, alkalinity, ferrous iron, and dissolved sulfide to evaluate changes in water quality across the sampling period.

All samples will be placed on ice after collection and will be brought to the sample management trailer to be prepared for shipment to approved laboratories.

Analytical services will be coordinated through EPA and include using the EPA Regional Laboratory, the EPA Contract Laboratory Program (CLP) and/or Tier IV subcontracted laboratory services through TechLaw.

7.2 Surface Water Sampling

Up to twelve surface water samples will be collected from locations near the site. The surface water samples will be collected in accordance with ERT SOP No. 2013, utilizing the direct method (ERT, 1994). Surface water sample media will be collected directly into laboratory certified pre-cleaned sample bottles as specified in Table 2. All samples will be placed on ice after collection. The analyses to be conducted on the surface water samples are summarized in Table 1.

Analytical services will be coordinated through EPA and include using the EPA Regional Laboratory, the EPA Contract Laboratory Program (CLP) and/or Tier IV subcontracted laboratory services through TechLaw.

7.3 Sample Identification Numbers

7.3.1 CLP Sample Numbers

Samples to be analyzed by CLP laboratories will be assigned CLP sample numbers (Nos.) in addition to Station Location Numbers. The CLP sample Nos.

will be automatically assigned by the Forms II Lite™ software. The sample number format will be as follows:

C#### where;

C indicates that the sample is to be analyzed under a CLP organics SOW.
indicates numbers that will be sequentially assigned as the sample data are entered into the Forms II Lite™ program.

7.3.2 Station Location Numbers

Sample Station Location numbers will be assigned by the sampling team to correspond with the location and the type of sample collected. The sample station location No. format will be as follows:

XX##-PF, where XX is:

RW = a ground water sample from a Dimock residential well
SW = a surface water sample
TB = trip blank
FB = field blank
EB = equipment blank
F = indicates a sample is filtered for metal analysis
P = indicates a post filtration sample

and where ## is:

= the unique identifier for each residential well sampled. This identifier will be related in a separate database to the specific residence being sampled.

7.3.3 DAS Sample Numbers

Samples to be analyzed under the Delivery of Analytical Services (DAS) program will receive a DAS sample number in addition to the station location numbers. Samples analyzed by the EPA OASQA laboratory are under the DAS program. The DAS sample number will be assigned as follows:

R3###-##, where:

R3### = the Region-assigned DAS project number; and
-## = the sequential number of the sample as collected.

7.4 Sampling Equipment and Decontamination

Dedicated, disposable sampling equipment will be used by TechLaw whenever possible.

7.5 Investigation Derived Wastes

TechLaw field team members will make every effort to minimize the generation of investigation-derived wastes (IDW) throughout the field event. Purge water for residential home well samples will be discharged in accordance with the Groundwater Monitoring and Maintenance Manual (PADEP, 2001). Disposable personal protective clothing and/or any sampling equipment generated during field activities will be bagged in opaque plastic garbage bags, and disposed of appropriately.

8.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROCEDURES

8.1 Quality Control of Field Activities

The START Site Leader is responsible for ensuring that sample quality and integrity are maintained in accordance with the QA/QC Procedures, and that the sample labeling and documentation is performed as described in Section 8.2 of this sampling plan.

8.2 Sample Documentation

All sample documentation will be completed legibly using indelible black or blue ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing and dating the error.

At each sampling location GPS coordinates will be collected using a GPS unit. These coordinates are to be recorded on the field data sheet or in the field logbook. The field data sheet will be used to document pertinent field screening measurements and sample information. Photographs of each house and each sampling spigot/faucet will be collected. The date and time stamp option will be selected (if available) on each camera. The data logging option (if available) will be selected on each water quality instrument used.

8.2.1 Field Logbook

The use of field logbooks by START for site documentation will be consistent with TechLaw SOP 03-01-04, Maintaining a Field Logbook (TechLaw, 2011a). The field logbook is a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed. All entries will be dated and signed by the individual making the entries, and include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, including site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Identification and description of samples and locations.
9. Subcontractor information and names of on-site personnel.

10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

8.2.2 Sample Labels/Tags QC

Sample labels and tags must clearly identify the particular sample. Required information for sample labels and tags is presented in *Contract Laboratory Program Guidance for Field Samplers*, EPA Publication 540-R-09-03, Final (January 2011) and is provided below.

Sample bottle labels must include the following information:

1. Sample number, as applicable;
2. Case No.;
3. Preservative(s);
4. Analysis/fraction.

Additional information may be included on the label, such as the Station Location (Sampler-assigned sample No.), date and time collected, etc.

Sample tags must include the following information:
1. Sample number, as applicable;
2. Case No.;
3. Station No. and/or Station Location No. (assigned by sampler);
4. Date sample was collected (month, day, and year);
5. Time sample was collected (in military time);
6. Preservative, if any (specify "None" if sample is not preserved);
7. Type of sample (grab or composite);
8. Analysis/fraction requested;
9. Sampler's names/signature(s);

Sample labels will be securely affixed to the sample container. Tie-on sample tags will be properly secured around the neck of the container.

8.2.3 Chain of Custody Record QC

Proper chain of custody will be maintained from the time the sample is collected to its final deposition. Every transfer of custody will be noted and signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they will be stored in a locked container sealed with a Custody Seal.

The Chain of Custody record/EPA Traffic Report (COC/TR) will include (at minimum) the following information:

1. Sample number, as applicable;
2. Case No.;

3. Sample matrices;
4. Specify sample type (grab or composite);
5. Analyses requested;
6. Laboratory turnaround time (TAT) [*Note: This does not include the TAT for data validation. If preliminary results (PR) are required, this must be specified on the COC.*)
7. Preservative(s);
8. Station location identifier (sampler assigned sample No.);
9. Date and time sample collected;
10. Field QC information (identify trip/field/blanks only as "Field QC");
11. Specify samples to be used for laboratory QC (MS/MSD);
12. Name(s) and signature(s) of sampler(s);
13. Signature(s) of any individual(s) with control over samples;
14. Carrier, air bill No., and date of the shipment.

8.2.4 Custody seals QC

Custody seals will be used on all shipping containers used to ship samples. Custody Seals demonstrate that a container has not been tampered with or opened. The individual shipping the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook. EPA Region III does not require custody seals on individual sample containers and has specifically directed samplers not to use custody seals on individual sample containers containing samples for volatile organics analysis (VOA).

8.3 Sample Packaging, Storage, and Shipping

In accordance with TechLaw SOP 04-02-01, Packaging and Shipping Samples – Environmental Procedures (TechLaw, 2011b), and *Contract Laboratory Program Guidance for Field Samplers*, sample containers will be labeled and shipped with a label and sample tag affixed to each container. Samples will be placed in plastic zipping bags. Bagged containers will be placed in appropriate transport containers and the containers will be packed with appropriate absorbent material and bubble wrap. All sample/traffic reports/COC documents will be affixed to the underside of each transport container lid. The lid will be sealed with shipping tape and custody seals affixed to the transport container. Transport containers will be labeled with the origin and destination locations. Regulations for packaging, marking, labeling, and shipping of hazardous materials and wastes are promulgated by the U.S. Department of Transportation (DOT). Air carriers which transport hazardous materials, in particular, Federal Express, require compliance with the current International Air Transport Association (IATA) Regulations, which apply to the shipment and transport of hazardous materials by air carrier. TechLaw will follow IATA regulations to ensure compliance.

8.4 Field QC Samples

Field QC will consist of one field duplicate for every ten field samples, or one per matrix if fewer than ten are collected. Duplicate samples will be documented in the Field Activities Logbook and on the Traffic Report (TR)/COC. The field duplicate will test the reproducibility of sampling procedures and analytical procedures. A trip blank will be collected and included in all coolers shipped that contain samples for VOC and dissolved gas analyses. A field blank will be collected to ensure the cleanliness of sample containers and to ensure that no cross-contamination has occurred during sample collection, preservation, and shipment, as well as in the laboratory. An equipment blank will be collected each day from the in-line filter which is used to collect samples for the dissolved metals analysis.

8.5 Laboratory QC

Laboratory QC will be in accordance with the method requirements.

8.6 Data Validation

Analytical data generated by the EPA OASQA laboratory will be reviewed and validated in accordance with OASQA standard procedures. Other analytical data for organic analyses generated under this Sampling QA/QC Work Plan will be evaluated in accordance with EPA *Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLMO1.0-OLMO1.9)* (September 1994) to Data Validation Level M2, and in accordance with *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses* (April 1993) at the IM2 Level. Validation for the analytical services subcontract arranged through TechLaw will be requested through the EPA ESAT contractor.

9.0 SCHEDULE OF ACTIVITIES

The schedule for the site is projected as follows:

Task Description	Start Date	End Date
Mobilize to area	1/10/12	1/10/12
Sample collection; sample packaging; sample shipping to laboratory	01/11/12	01/30/12

10.0 DELIVERABLES

The following deliverables will be provided under this project:

Analytical Data

- Expedited preliminary data turnaround time (<5 days) will be provided on the following list of compounds/tests:

coliform bacteria	aluminum
bis(2-ethylhexyl) phthalate (DEHP)	arsenic
ethylene glycol	lithium
2-methoxyethanol (Ethylene glycol monomethyl ether)	manganese
methane	sodium
2,2'oxybisethanol (diethylene glycol)	iron
triethylene glycol	

- With exceptions listed above, preliminary unvalidated data will be provided to the EPA OSC within 15 business days after receipt of the samples at the laboratory.

- A Data Validation Report will be provided to the EPA OSC within approximately 21 days of receipt of the laboratory analytical data package by TechLaw.

- TechLaw will incorporate the validated data from this sampling event into a Trip Report and/or After Action Report for the project.

11.0 REFERENCES

EPA, 2011. U.S. Environmental Protection Agency, *Contract Laboratory Program (CLP) Guidance for Field Samplers, Final*, Office of Solid Waste and Emergency Response (OSWER) publication EPA540-R-07-006, Washington, D.C. January.

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TABLE 1 - 01/09/12
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Parameter/Method	Matrix	Field Samples	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[4]
			Dup	Trip[1,2] Blanks	Field[2,3] Blanks	Equip[1] Blanks	MS/MSD	
EPA R2 Lab								
Methylene Blue Activa Substances (MBAS) (SM 5540C)	drinking water	60	6	-	5	-	-	71
EPA R3 Lab								
Anions: Chloride, Bromide, Fluoride, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	60	6	-	5	-	7	71
Glycols incl. 2-Butoxyethanol (Modified 8321)	drinking water	60	6	-	5	-	4	71
Metals Dissolved: Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Sb, Se, Sn, Sr, Ti, Tl, U, V, Zn (200.7/200.8/245.1)	Filtered drinking water	60	6	-	-	5	7	71
Metals: Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Sb, Se, Sn, Sr, Ti, Tl, U, V, Zn (200.7/200.8/245.1)	drinking water	60	6	-	5	-	7	71
Semi-Volatiles (TCL plus TICs) (OLC03.2)	drinking water	60	6	-	5	-	4	71
Solids, Total Dissolved (TDS) (SM 2540C)	drinking water	60	6	-	5	-	7	71
Solids, Total Suspended (TSS) (SM 2540D)	drinking water	60	6	-	5	-	7	71
Volatiles + Acrylonitrile (TCL + TICs) (OLC03.2)	drinking water	60	6	1	5	-	4	71
Wet Chemistry: - Phosphorus, Total (365.4); - Nitrate/Nitrite (353.2); - Nitrogen; Total (353.2)	drinking water	60	6	-	5	-	7	71
EPA R9 Lab								
Dissolved Gases, Methane, Ethane, Ethene, Propane, Butane (RSK-175, or equiv - EPA R9 SOP 325)	drinking water	60	6	1	5	-	4	71
DRO (8015M, or equiv-EPA R9 SOP 385)	drinking water	60	6	-	5	-	4	71
GRO (8015M, or equiv-EPA R9 SOP 380)	drinking water	60	6	-	5	-	4	71
NAREL								
Alpha Spec (Th-228, Th-230, Th-232) (DOE HASL 300)	drinking water	60	6	-	5	-	-	71
Alpha Spec (U-234, U-235, U-236, U-238) (DOE HASL 300)	drinking water	60	6	-	5	-	-	71
Gamma Spec Bi-212, Bi-214, K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238 (901.1)	drinking water	60	6	-	5	-	-	71
Gross Alpha/Beta (900.0)	drinking water	60	6	-	5	-	-	71
Ra-226 (903.1)	drinking water	60	6	-	5	-	-	71
Ra-228 (904.0)	drinking water	60	6	-	5	-	-	71
TBD								
1-methylnapthalene (8270 or equivalent)	drinking water	60	6	-	5	-	4	71
2-Methoxyethanol (8015B)	drinking water	60	6	-	5	-	4	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	60	6	-	5	-	4	71
Ethylene Glycol (8015M)	drinking water	60	6	-	5	-	4	71
Oil & Grease (HEM) (1664A)	drinking water	60	6	-	5	-	-	71
Tier IV								
Bacteria (fecal & total coliform, HPC) (SM 9222B; SM 9215B w/R2A medium)	drinking water	60	6	-	5	-	-	71
Tier IV								
Isotech - d13C and d2H of methane; - Complete compositional analysis of headspace gas; - Stable isotopes of water (O,H)	drinking water	18	2	-	-	-	-	20

Notes:

1. This QA sample will be an aqueous matrix.
2. Trip blank samples will be collected at a rate of 1 per VOA and 1 per RSK-175 cooler per day
3. Field blank samples will be collected at a rate of 1 per day
4. Estimate based on 5 sampling days

Key:

Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
QA/QC = Quality assurance/quality control
Dup = Duplicate

TABLE 2 - 01/09/12
SAMPLE ANALYTICAL REQUIREMENTS SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Analytical parameter and Method	Matrix	Sample Preservation	Holding Time	Sample Container(s)
EPA R2 Lab				
Methylene Blue Active Substances (MBAS) (SM 5540C)	drinking water	Ice, 4°C	48 hours	One 500-ml HDPE
EPA R3 Lab				
Anions: Chloride, Bromide, Fluoride, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	Ice, 6°C	28 days	One 500-ml HDPE
Glycols incl. 2-Butoxyethanol (Modified 8321)	drinking water	Ice, 6°C	7 days	One 40-ml glass vial (Fill to capacity with no head space)
Metals, Dissolved: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	(filtered) drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 500-ml HDPE
Metals: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 500-ml HDPE
Semi-Volatiles (TCL plus TICs) (OLC03.2)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids
Solids, Total Dissolved (TDS) (SM 2540C)	drinking water	Ice, 6°C	7 days	One 500-ml HDPE
Solids, Total Suspended (TSS) (SM 2540D)	drinking water	Ice, 6°C	7 days	One 500-ml HDPE
Volatiles + Acrylonitrile (TCL + TICs) (OLC03.2)	drinking water	2 drops of 1:1 HCl, pH<2, Ice, 6°C	14 days	Four 40-ml glass vials w/Teflon lined cap (no head space)
Wet Chemistry: - Phosphorus, Total (365.4); - Nitrate/Nitrite (353.2); - Nitrogen; Total (353.2)	drinking water	pH<2, H2SO4, and cool with ice, 4°C	28 days	One 500-ml HDPE
EPA R9 Lab				
Dissolved Gases, Methane, Ethane, Ethene, Propane, Butane (RSK-175, or equiv - EPA R9 SOP 325)	drinking water	pH<2 with HCl and cool with ice, 4°C	7 days	Two 40-ml glass vial
DRO (8015M, or equiv-EPA R9 SOP 385)	drinking water	Ice, 4°C	7 days extract	Two 1-Liter amber glass jars with teflon-lined lids
GRO (8015M, or equiv-EPA R9 SOP 380)	drinking water	pH<2 with HCl and cool with ice, 4°C	14 days	Two 40-ml glass vials (Fill to capacity with no head space)
NAREL				
Alpha Spec (Th-228, Th-230, Th-232) (DOE HASL 300)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Alpha Spec (U-234, U-235, U-236, U-238) (DOE HASL 300)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Gamma Spec Bi-212, Bi-214, K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238 (901.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Gross Alpha/Beta (900.0)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Ra-226 (903.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
Ra-228 (904.0)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE
TBD				
1-methylnapthalene (8270 or equivalent)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids
2-Methoxyethanol (8015B)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	Ice, 6°C	7 days	Two 40-ml glass vials (Fill to capacity with no head space)
Ethylene Glycol (8015M)	drinking water	Ice, 4°C	7 days	Two 40-ml glass vials (Fill to capacity with no head space)
Oil & Grease (HEM) (1664A)	drinking water	pH<2, H2SO4, and cool with ice, 4°C	28 days	One 1-Liter amber glass jars with teflon-lined lids
Tier IV				
Bacteria (fecal & total coliform, HPC) (SM 9222B; SM 9215B w/R2A medium)	drinking water	Ice, 4°C (.008% Na2S2O3 if residual Cl- present)	6 hours	One 125 ml Pre-sterilized polypropylene
Tier IV				
Isotech - d13C and d2H of methane; - Complete compositional analysis of headspace gas; - Stable isotopes of water (O,H)	drinking water	Ice, 4°C, biocide pill in sample container	6 months	One 1-Liter HDPE

KEY:

°C = degrees Celsius
CLP = Contract Lab Program
CLP = Contract Lab Program
D2H = delta of deuterium
H2SO4 = Sulfuric Acid
HDPE = High density polyethylene
HNO3 = Nitric Acid
HPC = Heterotrophic Plate Count
ml = milliliter
Na2S2O3 = Sodium Thiosulfate
pH = potential Hydrogen
QL = Quantitation Limit
Sr = Strontium
TCL = Target Compound List
TICs = Tentatively Identified Compounds
ug/L = micrograms per liter

ISOTECH
ISOTECH LABORATORIES INC
1308 Parkland Court Champaign, IL 61821 • (877) 362-4190 • www.isotechlabs.com

Collection of Ground Water Samples from Domestic and Municipal Water Wells for Dissolved Gas Analysis

These instructions are based on sampling protocol created by Anthony Gorody, adopted by the Colorado Oil and Gas Conservation Commission, and are reproduced here with their permission.

The basic technique is to fill a white 5 gallon bucket with source water and then fill the 1 liter sample collection bottle fully immersed in the bucket.

When sampling from a pressurized water system, it is recommended to use an outdoor spigot or other source which bypasses any water treatment systems (i.e. water softeners, etc.).

To collect a sample for isotopic and chromatographic analysis from water that is not effervescent, using 1L bottle with septum cap:

After purging the well, fill the 5 gallon bucket with water. Attach a nozzle and 12" length of ¼ inch diameter tubing to the end of the 5/8 inch hose connected to a faucet. Make sure that the flow rates through the tubing are low. Remove the cap of the 1 L bottle and fill it with water. Once the bottle filled, immerse it in the 5 gallon bucket full of water, keeping the tubing at the bottom of the bottle. Place the bottle at the bottom of the bucket under a head of water, and keep water flowing at a low rate until another 2 volumes of water have been displaced from the bottle. Then slowly lift the tubing out of the bottle and immediately cap it under water. No air should be allowed into the 1 L bottle. When finished, tape the cap to the bottle around the neck, pack the bottle upside down in ice, and ship it overnight.

To collect a headspace gas sample from an effervescent water well:

Fill the bottle with water. Submerge the bottle into the 5 gallon bucket filled with well water and invert it. Insert the ¼ inch tubing into the bottle, increase the flow rate to 2-3 gpm and allow the bubbling gases to displace water in a headspace until 1/4 to 1/2 of the water in the bottle has been displaced. Seal the container under water with the septum and screw cap, tighten it securely. When finished, tape the cap to the bottle around the neck, pack the bottle upside down in ice, and ship it overnight.

Please note Isotech's receiving hours of **Monday thru Friday** 8:00 am to 4:30 pm.
Ship samples to:

Isotech Laboratories, Inc.
1308 Parkland Court
Champaign, IL 61821

These instructions have been provided to simplify the collection of samples for dissolved gas analysis. Although we try to foresee and avoid problems in the field, it is never possible to predict every situation. If you encounter any difficulties, or if any additions or changes in these instructions would be beneficial, please let us know. Isotech Laboratories, Inc. makes no warrantee as to the applicability and/or safety of the procedures described herein.

Fw: Lab Support Needs for R3 Project - Alcohols

Cynthia Caporale to: Cynthia Metzger, Richard Rupert, Fred Foreman, Stevie Wilding, Kevin Martin — 01/06/2012 09:36 AM

Cc: Jennifer Gundersen, Adam Molnar, kevin Poff, Eric Graybill, Sue Warner

From: Cynthia Caporale/ESC/R3/USEPA/US

To: Cynthia Metzger/ESC/R3/USEPA/US@EPA, Richard Rupert/R3/USEPA/US, Fred Foreman/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US, Kevin Martin/ESC/R3/USEPA/US@EPA

Cc: Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Adam Molnar/ESC/R3/USEPA/US@EPA, kevin Poff/ESC/R3/USEPA/US@EPA, Eric Graybill/ESC/R3/USEPA/US@EPA, Sue Warner/ESC/R3/USEPA/US@EPA

Looks like R6 can help us with the alcohol analysis if we need it. Since Jennie is needed to discuss LC/MS/MS efforts I'll arrange a meeting on Monday to discuss details.

---- Forwarded by Cynthia Caporale/ESC/R3/USEPA/US on 01/06/2012 09:34 AM ----

From: David Neleigh/R6/USEPA/US
To: Cynthia Caporale/ESC/R3/USEPA/US@EPA
Cc: mcmillin.rick@epa.gov
Date: 01/06/2012 09:23 AM
Subject: Re: Lab Support Needs for R3 Project - Alcohols

We can do it. We can talk next week or you can call today.

David Neleigh
Director, Region 6 Laboratory
(281) 983-2209
(281) 983-2124 fax
(281) 415-6818 cell

Cynthia Caporale	Happy New Year, Everyone! Before the holidays I...	01/06/2012 07:58:10 AM

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Ernest Waterman/R1/USEPA/US@EPA, John Bourbon/R2/USEPA/US@EPA, Gary Bennett/R4/USEPA/US@EPA, Dennis Wesolowski/R5/USEPA/US@EPA, George Schupp/R5/USEPA/US@EPA, David Neleigh/R6/USEPA/US@EPA, Mark Burkhardt/R8/USEPA/US@EPA, Michael Davis/R7/USEPA/US@EPA, Brenda Bettencourt/R9/USEPA/US@EPA, Richard Bauer/R9/USEPA/US@EPA, Barry Pepich/R10/USEPA/US@EPA
Cc: Chris Zawlocki/DC/USEPA/US@EPA, Cynthia Metzger/ESC/R3/USEPA/US@EPA, Fred Foreman/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US
Date: 01/06/2012 07:58 AM
Subject: Lab Support Needs for R3 Project - Alcohols

Happy New Year, Everyone!

Before the holidays I sent out a request for lab support to address the analytical gaps associated with a R3 Project on Marcellus Shale issues. The project is currently on-hold; however, work is still underway to line up

lab support. To avoid potential conflict of interest with commercial laboratories, the goal is to complete the analysis within EPA, as much as possible.

I would like to thank Region 9 and Region 2 for offering support towards this project. Region 9 has offered to accept samples for dissolved gases and GRO/DRO. Region 2 has offered to accept samples for the MBAS (methylene blue active substances).

There is a full suite of analysis (metals, VOAs, SVOCs, Anions, TP, N/N, TDS/TSS, glycols, alcohols, O&G) that our lab has agreed to accept. NAREL has agreed to accept the radiological parameters.

An area where we would like some assistance is with the alcohols. We are planning to take these samples but it would be helpful to have a backup Region or share technical expertise. Two parameters that are not routine for us are ethylene glycol and 2-methoxyethanol - both of which are extremely important to this project. We are trying to add these to the LC/MS/MS glycol analysis to achieve lower detection limits; however, if that is unsuccessful then we need to run the routine methods. Currently we are evaluating several options with 8015, 8270, and 8430 (GC/FTIR).

ethylene glycol (8015M)
2-methoxyethanol (8015B)

I'm in the office all day today if you want to give me a call to discuss details.

Cindy

Cynthia Caporale, Chief
OASQA Laboratory Branch
U.S. EPA Region III
Environmental Science Center
Fort Meade, MD
(410) 305-2732
Fax: (410) 305-3095

Fw: Dimock Sampling Plan - Draft Final for Review
Cynthia Caporale to: Sue Warner, Kevin Martin, Stevie Wilding 01/05/2012 09:00 AM

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US

FYI: Here are the R9 methods. I'll place the files on the ASQAB_AT/Special Projects.

Cynthia Caporale, Chief
OASQA Laboratory Branch
U.S. EPA Region III
Environmental Science Center
Fort Meade, MD
(410) 305-2732
Fax: (410) 305-3095
— Forwarded by Cynthia Caporale/ESC/R3/USEPA/US on 01/05/2012 08:27 AM —

From: Richard Bauer/R9/USEPA/US
To: Cynthia Caporale/ESC/R3/USEPA/US@EPA
Cc: R9RSCC@EPA
Date: 01/04/2012 05:32 PM
Subject: Re: Fw: Dimock Sampling Plan - Draft Final for Review

Hi Cindy:

From the list of analyses in the table (and your indication of what you are planning to take at your lab) it looks like the things we can offer that would be the most helpful would be the dissolved methane, ethane, ethene (RSK-175), the TPH-DRO and the TPH-GRO. As previously stated we could also help with many of the others (metals, inorganics, solids) if you need us to.

Attached are an Excel file with three tabs which includes quantitation limits, QC limits and bottles and preservation info. (Note that we would like three VOA vials for the RSK-175, not one as listed in the sampling plan).

Also attached are our current SOPs for these analyses.

dimrock.xls SOP 385 R4.pdf SOP275 R5.pdf SOP 325 R2.pdf SOP 380 R7.pdf

****
Richard Bauer
U.S. EPA Region 9 Laboratory
1337 South 46th Street, Bldg 201
Richmond, CA 94804
(510) 412-2312
****

Cynthia Caporale	Richard, Thursday would work for me.	01/04/2012 06:17:55 AM

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Richard Bauer/R9/USEPA/US@EPA
Date: 01/04/2012 06:17 AM
Subject: Fw: Dimock Sampling Plan - Draft Final for Review

Richard,

Thursday would work for me.

Below is the sampling plan (draft) - I have a few comments and questions concerning the plan and hope to talk to the OSC today. In the meantime, you will find the list of parameters in the tables (pdf version only). We are doing the anions, glycols, metals, nitrate/nitrite, O&G, TP, SVOCs, TDS, TSS, VOAs. I think NERL is taking the radionuclides. Bacteria will need to be done by a local lab due to HTs.

More clarification on this project is needed but hopefully the tables provide some idea of the methods and number of samples being planned.

I'm in a meeting this morning so if you want to talk today 4:00EST would be fine.

Thanks again,
Cindy
Cynthia Caporale, Chief
OASQA Laboratory Branch
U.S. EPA Region III
Environmental Science Center
Fort Meade, MD
(410) 305-2732
Fax: (410) 305-3095
— Forwarded by Cynthia Caporale/ESC/R3/USEPA/US on 01/04/2012 09:11 AM —

From: Richard Rupert/R3/USEPA/US
To: KarenD Johnson/R3/USEPA/US@EPA, Cynthia Caporale/ESC/R3/USEPA/US@EPA
Cc: Dennis Carney/R3/USEPA/US@EPA, Gerald Heston/R3/USEPA/US@EPA, Richard Fetzer/R3/USEPA/US@EPA, Ann DiDonato/R3/USEPA/US@EPA
Date: 12/31/2011 07:57 AM
Subject: Fw: Dimock Sampling Plan - Draft Final for Review

Karen and Cynthia,

Please find the final draft of the SAP for Dimock attached below. I am providing the main body of the SAP in Word so you may add comments as you wish. The tables are only present in the pdf version of the SAP.

We would like to finalize the plan by close of business Wednesday January 4. If you are able please provide any comments you may have by then. If you need more time please let me know and we will do all we can to accommodate your needs.

You may call me at your convenience using my mobile as listed below.

thanks
Rich

Richard Rupert
On-Scene Coordinator
U.S.EPA
1650 Arch Street - 3HS31
Philadelphia, PA 19103
(215) 814-3463
MOBILE 215 514 8773
rupert.richard@epa.gov
---- Forwarded by Richard Rupert/R3/USEPA/US on 12/31/2011 07:44 AM ----

From: "Carter, Joe" <Jcarter@TechLawInc.com>
To: Richard Rupert/R3/USEPA/US
Cc: "Graves, Suddha" <Sgraves@TechLawInc.com>
Date: 12/30/2011 01:24 PM
Subject: Dimock Sampling Plan - Draft Final for Review

Rich,

Attached for your team's review, please find the most-recent Dimock sampling plan which incorporates elements of our discussions yesterday as well as that subject matter discussed with Dr. Ludwig. The .pdf contains the attachments. Please let us know if you have any questions. Thanks,

Joe Carter
TechLaw, Inc.
2208 Warwood Avenue
Wheeling, WV 26003
304-230-1230 (Office M-F, 8-5)
304-830-1443 (Cell)
304-232-5006 (Fax)
jcarter@techlawinc.com


SAP Dimock_Draft_Final_Ver 1.0.pdf


SAP Dimock_Draft_Final_Ver 1.0.docx

Marcellus Shale Project

12/22/11

			Water Sample Requirements					
Group	**Analytes of interest**	**CAS #**	**Method**	**Minimal**	**Volume**	**Container Type**	**Preservation**	**HT**
Metals	includes Strontium and barium Al, Ca, Cr,Cu, Fe, Mg, Mn,Ni,Na,As, As, Se,Zn,Ti,Sr, Ba,Sn,Sb,Be,Cd,Co, Tl, U, V, K, B		200.8/ 200.7	500 mL	1000 mL	Plastic Bottle	pH < 2 HNO3	6 Months
Anions	Sulfate as SO4		300.0	1000 mL	400 mL	Glass or Plastic	Cool ≤ 6°C	28 Days
	Bromide		300.0					
	Chloride		300.0					
	Fluoride	16984-48-8	300.0					
	Nitrate as N		300.0					
	Nitrite as N		300.0					
	Orthophosphorus as P	screen	300.0					
		post treatment						
TSS	Total Suspended Solids	not needed	SM 2540D		500 mL	Glass or Plastic	Cool ≤ 6°C	7 Days
TDS	Total Dissolved Solids		SM 2540C		500 mL	Glass or Plastic	Cool ≤ 6°C	7 Days
pH	pH		SW9040C					
Alkalinity	(Total, Hardness, HCO3, CO3)		SM2320B, 2340B		400 mL	Glass or Plastic	Cool ≤ 6°C	14 Days
Wet Chemistry	Total Phosphorus	use OrthoP	365.1	500 mL	400 mL	Glass or Plastic	H2SO4 to pH<2, Cool ≤ 6°C	28 Days
	Nitrate/Nitrite	prefer	353.2	1500 mL for QC	400 mL	Glass or Plastic	H2SO4 to pH<2, Cool ≤ 6°C	28 Days
	Total Nitrogen		353.2					
VOC	Target Compound List plus TICs		CLP trace (0.5 ug/L (	160 mL	240 mL	6 Glass 40 mL vial w/Teflon lined cap	2 drops* of 1:1 HCl, Cool ≤ 6°C	14 Days
			Plus TICs	(360 mL for QC)			*If samples are expected to be alkaline, an additional 2 drops can be added ONLY if necessary	
	Acrylonitrile							

Marcellus Shale Project

12/22/11

			Water Sample Requirements					
Group	**Analytes of interest**	**CAS #**	**Method**	**Minimal**	**Volume**	**Container Type**	**Preservation**	**HT**
SVOC	Target Compound List plus TICs (phthalates included)		CLP Trace Plus TICs	1 liter (for QC, Three 1 liter)	Two 1 liter	Amber glass	Cool ≤ 6°C	7 Days
FTIR	Screen for Unknowns			40 mL				
HPLC	Glycols 2-Butoxyethanol	(In VOAs)	SW8316	40 mL	120 mL	3 Glass 40 mL vial w/Teflon lined cap	Cool ≤ 6°C	7 Days
GC	Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol		8015D	40 mL	120 mL	3 Glass 40 mL vial w/Teflon lined cap	Cool ≤ 6°C	7 Days

Radiation screen upon receipt includes alpha, beta, gamma

SVOCs - limit is 20 samples in 3 days.

TSS - only need on untreated samples (pre-treatment); not beneficial for post-treatment

OrthoP will be a screen and if found to be present sample would be used for Total Phosphorous analysis (capture phosphate esters, etc.)

Need decision on Nitrate/Nitrite (separate or combined)? Issue is 24 hours TAT to have separate analysis.

QC Requirements --

For each parameter, the laboratory will need 3 times the minimum volume for one sample per batch of

- **10 samples for inorganic parameters**
- **20 samples for organic parameters**

Fw: Dimock sampling

Sue Warner to: Cynthia Caporale, Stevie Wilding, Jennifer Gundersen, Adam Molnar, Robin Costas, John Curry, Kevin Martin 12/22/2011 10:51 AM

From: Sue Warner/ESC/R3/USEPA/US

To: Cynthia Caporale/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Adam Molnar/ESC/R3/USEPA/US@EPA, Robin Costas/ESC/R3/USEPA/US@EPA, John Curry/ESC/R3/USEPA/US@EPA, Kevin

This is what they have found at Dimock in previous sampling.

---- Forwarded by Sue Warner/ESC/R3/USEPA/US on 12/22/2011 10:48 AM ----

From: Richard Rupert/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA
Date: 12/22/2011 10:15 AM
Subject: Re: Dimock sampling

Based on the maximum results for the approximately 18 wells sampled, levels of coliform bacteria, methane, ethylene glycol, bis(2-ethylhexyl) phthalate (DEHP), 2-methoxyethanol, aluminum, arsenic, lithium, manganese, sodium, and iron were elevated above comparison values (CVs).

The Rad parameters will be contract out.

Alcohols - FID ~~ADAM~~ (R3) Method 3508

Anions - Total Phos will be run only if it shows up as a hit when running Anions

Bact - another Lab (Dave will look at the method)

Methane -

Glycols - R3 modified 8316

Metals - R3 filtered/unfiltered samples

Mercury - Do they want it on the list

Nitrate-Nitrite -

Oil + Grease - Not doing

SVOC - R3 maybe

TDS - TSS -> R3

- Change the NDA holding Times from 7 to 14 days

ALIS Paragon Ft Collins

- Remove The FTIR stuff

Re: Dimock sampling

Richard Rupert to: Sue Warner 12/22/2011 11:51 AM

Cc: Adam Molnar, Cynthia Caporale, Jennifer Gundersen, John Curry, Kevin Martin, Robin Costas, Stevie Wilding

From: Richard Rupert/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA
Cc: Adam Molnar/ESC/R3/USEPA/US@EPA, Cynthia Caporale/ESC/R3/USEPA/US@EPA, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, John Curry/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Robin Costas/ESC/R3/USEPA/US@EPA, Stevie

No problem on the 4 compounds at bottom, they are not on our list of analytes.
thanks
Rich

Sue Warner	Rich, As we talked about on the phone, here are t...	12/22/2011 10:38:14 AM

From: Sue Warner/ESC/R3/USEPA/US
To: Richard Rupert/R3/USEPA/US
Cc: Adam Molnar/ESC/R3/USEPA/US@EPA, Cynthia Caporale/ESC/R3/USEPA/US@EPA, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, John Curry/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Robin Costas/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US
Date: 12/22/2011 10:38 AM
Subject: Re: Dimock sampling

Rich,

As we talked about on the phone, here are the requested MCLs for the semivolatile compounds regulated by drinking water and our associated quantitation limit:

Compound	MCL (ug/L)	Lab quantitiation limit (ug/L)
Pentachlorophenol	1	5
Hexachlorobenzene	1	5
Hexachlorocyclopentadiene	50	5
Benzo (a) pyrene	0.2	5
Di (2-ethylhexyl) adipate	400	We do not analyze for this compound
Di (2-ethylhexyl) phthalate	6	5

As the table shows, using our current methodology, we cannot meet the MCLs for:

Pentachlorophenol
Hexachlorobenzene
Benzo (a) pyrene
Di (2-ethylhexyl) adipate

Sue

Richard Rupert	I think we could talk through this much easier tha...	12/22/2011 10:06:29 AM
Sue Warner	Rich, Attached is a list of the methods that our la...	12/22/2011 09:34:54 AM

Fw: Dimock Sampling

Cynthia Caporale to: Richard Rupert 12/22/2011 02:17 PM
Cc: Jennifer Gundersen, Sue Warner, Kevin Martin

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Richard Rupert/R3/USEPA/US
Cc: Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Sue Warner/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA

Rich,

Below are the specific glycols Jennie has been analyzing for the ORD HF Study.

Cindy

---- Forwarded by Cynthia Caporale/ESC/R3/USEPA/US on 12/22/2011 02:16 PM ----

From: Jennifer Gundersen/ESC/R3/USEPA/US
To: Cynthia Caporale/ESC/R3/USEPA/US
Date: 12/22/2011 08:46 AM
Subject: Re: Dimock Sampling

---

if you want to be more specific on my stuff

2-butoxyethanol CAS 111-76-2 NQL 5ppb
diethylene glycol CAS 111-46-6 NQL 25ppb
triethylene glycol CAS 112-27-6 NQL 25ppb
tetraethylene glycol CAS 112-60-7 NQL 25ppb

no capability for ethylene glycol CAS 107-21-1

Cynthia Caporale	Here is the table with our comments. Please revi...	12/22/2011 08:33:14 AM

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA
Cc: Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US, Robin Costas/ESC/R3/USEPA/US@EPA, Adam Molnar/ESC/R3/USEPA/US@EPA
Date: 12/22/2011 08:33 AM
Subject: Re: Dimock Sampling

Here is the table with our comments. Please review and let me know by 9:30 if okay to send.
After the RICT meeting I'll check with Rich to see if we need a conference call today or if this can wait until January.

[attachment "Sampling Table for Marcellus Shale.xls" deleted by Jennifer Gundersen/ESC/R3/USEPA/US]

I saved the file under AT_Shared/Special Projects/Dimock Project 2012.

Thanks again to everyone for our meeting yesterday.

Sue Warner	Attached is a file that Stevie had and I amended f...	12/19/2011 03:18:36 PM
Cynthia Caporale	Kevin and Sue, There is a possibility that HSCD wi...	12/19/2011 11:08:34 AM

Re: Dimock sampling

Sue Warner to: Richard Rupert 12/22/2011 10:38 AM

Cc: Adam Molnar, Cynthia Caporale, Jennifer Gundersen, John Curry, Kevin Martin, Robin Costas, Stevie Wilding

From: Sue Warner/ESC/R3/USEPA/US
To: Richard Rupert/R3/USEPA/US
Cc: Adam Molnar/ESC/R3/USEPA/US@EPA, Cynthia Caporale/ESC/R3/USEPA/US@EPA, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, John Curry/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Robin Costas/ESC/R3/USEPA/US@EPA, Stevie

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Sue

Richard Rupert | I think we could talk through this much easier tha... | 12/22/2011 10:06:29 AM

From: Richard Rupert/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA
Cc: Adam Molnar/ESC/R3/USEPA/US@EPA, Cynthia Caporale/ESC/R3/USEPA/US@EPA, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, John Curry/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Robin Costas/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US
Date: 12/22/2011 10:06 AM
Subject: Re: Dimock sampling

I think we could talk through this much easier than shooting emails back and forth. Would who ever is

appropriate give me a call on my mobile soonest. Our contractor needs to have a draft plan to us by tomorrow and this part of the plan needs to be in their hands pretty quick if they are to meet their deadline.

thanks
Rich

Richard Rupert
On-Scene Coordinator
U.S.EPA
1650 Arch Street - 3HS31
Philadelphia, PA 19103
rupert.richard@epa.gov
215 514 8773

Sue Warner	Rich, Attached is a list of the methods that our la...	12/22/2011 09:34:54 AM

Vendors for sample containers

Kevin Martin to: Gerard Crutchley, Jose Reyna, Wilbur Martinez, Justin Young

12/20/2011 04:31 PM

Cc: Cynthia Caporale

Hey,

We're having an upcoming sampling event, with several parameters, that must be collected in the proper containers (type, size, already have the correct preservation in them). We may need to expand the parameters, but the following are the parameters that we're currently looking to do:

Anions
Alkalinity
Nutrients (Total Nitrogen, Ammonia, and Total Phos)
PAH
SVOCs
VOCs
Pesticides
TSS
TDS
Total Metals

Who are the venders you use for your sample containers (name, catalog numbers, etc)?

Any help that you can provide would greatly be appreciated.

Thank You,

Kevin Martin

Kevin Martin, Chemist
Environmental Science Center
701 Mapes Road
Fort Meade, MD 20755-5350
(410) 305-3032

CUSTOMER COPY

SHIP ORDER

No.

KOLS CONTAINERS, INC.

1408 DeSoto Road
Baltimore, MD 21230
BALTIMORE PHONE (410) 646-2300
OUTSIDE OF MARYLAND (800) 457-KOLS
FAX NO. (410) 646-5671

GLASS AND PLASTIC CONTAINERS / CLOSURES

2-11-0

BILL TO	SHIP TO	DATE SHIPPED
EPA-FLF MAPES ROAD FT MEADE, MD 20755-5150	U.S. EPA-FLF 701 MAPES RD FORT MEADE, MD 20755-5150	2-11-09
	SPEC. INSTR.	DATE ENTERED

ST. NO.	CUSTOMER P.O. NO.	SALESMAN	S	S	SHIP VIA	DATE REQUIRED
1082	george boughton	02 HOUSE ACCT	mc			

MARKS:

TONS	PACKING	TOTAL QUAN.	ITEM NO.	CAPACITY	COLOR	STYLE	FINISH	MOLD NO.
	180	360				******CRE IT CARD ORDER**** P2 307.16 APPROVAL # 090435 DRIVER INSTRUCTIONS: ENTER OFF ERNIE PYLE DIST. 320Z NAT HD DRUM 3UP SQUAT	SQUAT	

I-CHEM

341-0950

1 liter
Amber

PALLETS NOT RETURNED WILL BE INVOICED. MERCHANDISE RETURNED WILL BE SUBJECT TO INSPECTION & APPROVAL.

TAL CARTONS	+	CAPS BOX	CAPS PKG.	=	TOTAL PIECES	RECEIVED BY	DATE
						WORKS	

OF PALLETS DEL.	NO. OF PALLETS RET.	PICKER	CHECKER	TRUCK	DRIVER	STOP	LOAD	BALANCE TO FOLL.	COMPLETES ORD.
		DH	JC						

PPED ITEMS HAVE BEEN BACK ORDERED AND WILL BE SHIPPED AS SOON AS POSSIBLE
E NOT RESPONSIBLE FOR CONTINGENT DAMAGES. NO CLAIMS WILL BE ALLOWED UNLESS PRESENTED WITHIN FIVE DAYS.

IMPORTANT: DOUBLE CHECK YOUR COUNT BEFORE SIGNING

DIM0206182 DIM0206280

SCI/SPEC CONTAINMENT PRODUCTS LABORATORY SUPPLIES
Committed to quality since 1963

INVOICE

BALTIMORE···CHICAGO···DALLAS···RENO

Scientific Specialties Service, Inc
7201 Standard Drive
Hanover, MD 21076-1322 USA

410-712-4400
FAX 410-712-4401
E-MAIL sales@scispec.com
WEB SITE www.scispec.com

BILL TO-

US EPA Fort Meade
Environmental Science Center
ATTN: Accounts Payable
701 Mapes Road
Fort Meade MD 20755-5350

SHIP TO-

US EPA Fort Meade
Environmental Science Center
ATTN: GEORGE HOUGHTON
701 Mapes Road
Fort Meade MD 20755-5350

INVOICE NUMBER/DATE	ORDER NUMBER/DATE	CUSTOMER NUMBER	CUSTOMER P O NUMBER	TERMS	SHIP VIA	SALES REP
160741 03/11/09	225089 03/11/09	207020 GEORGE	CREDIT CARD	VISA	UPS-Ground/Com PAC	

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT
Ex. 4 - CBI	072	276840 LOC 001 40ml Precleaned Amber Glass VOA Vial W/Poly. Open Top Cap & Teflon/Silicone Septum	Ex. 4 - CBI	119.63

****
PLEASE SHIP TODAY OR TOMORROW
IF POSSIBLE THANKS
****

Subtotal	119.63
Visa [redacted]	.00
Date 5/11 Auth	
Total Due	119.63

PAID 3/12/09

NEW REMITANCE ADDRESS:
Scientific Specialties Service, Inc
Federal Tax ID #52-080-4350
Accounts Receivable
7201 Standard Drive
Hanover, MD 21076-1322 USA

THANK YOU FOR YOUR ORDER!

NOTE: ACCOUNTS DUE OVER 30 DAYS FROM SHIPMENT ARE SUBJECT TO 1-1/2% PER MONTH SERVICE CHARGE.

Re: Dimock Sampling

Cynthia Caporale to: Sue Warner 12/22/2011 08:33 AM

Cc: Jennifer Gundersen, Kevin Martin, Stevie Wilding, Robin Costas, Adam Molnar

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA
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Sampling Table for Marcellus Shale.xls

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Date: 12/19/2011 03:18 PM
Subject: Re: Dimock Sampling

Attached is a file that Stevie had and I amended for this sampling. Please take a look at it and see if I left anything out. Should ammonia be on here? Robin, please check the list of metals. We cannot do methane at this time, but Adam is working on adding this capability (column is on order).

[attachment "Sampling Table for Marcellus Shale.xls" deleted by Cynthia Caporale/ESC/R3/USEPA/US]

Cynthia Caporale	Kevin and Sue, There is a possibility that HSCD wi...	12/19/2011 11:08:34 AM

Rich Rupert > Rmt of Contract

Sampling end of Jan

At least 40 homes

Dimock Sampling

Cynthia Caporale to: Kevin Martin, Sue Warner 12/19/2011 11:08 AM

Cc: Stevie Wilding, Jennifer Gundersen

Kevin and Sue,

There is a possibility that HSCD will go out sampling next month on some home wells related to the Dimock HF issue. I briefly spoke to Rich Rupert last week and he had few details but progress is underway to outline a list of analytes and develop a sampling plan. I gave Rich both of your names as contacts for us. If there are any conference calls or more information this week I'll let you know. For now I will send you two emails that were sent to me.

Sue - would you pull together a list of parameters based on the ORD HF Study and what we recommended in the past?

We can discuss more tomorrow at the branch meeting.

Cindy

(1) Might need to Provide QLs

(2) Discussion on Whether to use Drinking Water Methods - vs - SW-846
- Because of the ↑ concentrations (Rich Rupert) did agree w/ SW-846.
- But might need to run DW if results are non-detect.

(3) Sue gave an update Spreadsheet.

Re: Dimock Sampling

Sue Warner to: Cynthia Caporale 12/20/2011 08:11 AM

Cc: Jennifer Gundersen, Kevin Martin, Stevie Wilding, Robin Costas, Adam Molnar

We should ask each analyst to provide their QLs. We will provide drinking water quan limits for VOAs; for semi-volatiles we do not run the drinking water method 525.2. We don't do drinking water methods for glycols by HPLC or alcohols by GC. As far as I am know there are no drinking water limits for alcohols or glycols.

We can do the following compounds(by SVOA GC/MS) that were listed in the emails:

Butyl benzyl phthalate
Di-n-butyl phthalate
Diethylthalate
Bis(2-ethylhexyl)phthalate
2-Methylnaphthalene
Phenanthrene
1 -Methylnapthalene
Acenaphthene

For the remaining 2 compounds in the emails:

2,2' Oxybisethanol is diethylene glycol which Jennie can do by HPLC.
2 -Methoxyethanol is methyl cellosolve or ethylene glycol monomethyl ether. Jennie, could you see this one?

Cynthia Caporale	We probably need to provide QLs at some point. ...	12/19/2011 03:23:05 PM

From: Cynthia Caporale/ESC/R3/USEPA/US
To: Sue Warner/ESC/R3/USEPA/US@EPA
Cc: Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US, Robin Costas/ESC/R3/USEPA/US@EPA, Adam Molnar/ESC/R3/USEPA/US@EPA
Date: 12/19/2011 03:23 PM
Subject: Re: Dimock Sampling

We probably need to provide QLs at some point. There was a discussion on whether to use DW methods vs. SW-846. Because of the potential for higher concentrations Rich Rupert did agree with SW-846 but we might need to run DW if results are non-detect.

In the recent emails there were add'l SVOC compounds. Are these included in our list of analytes?

Cindy

Sue Warner	Attached is a file that Stevie had and I amended f...	12/19/2011 03:18:36 PM

From: Sue Warner/ESC/R3/USEPA/US
To: Cynthia Caporale/ESC/R3/USEPA/US@EPA, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Stevie Wilding/ESC/R3/USEPA/US, Robin Costas/ESC/R3/USEPA/US@EPA, Adam Molnar/ESC/R3/USEPA/US@EPA
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Sue - would you pull together a list of parameters based on the ORD HF Study and what we recommended in the past?

We can discuss more tomorrow at the branch meeting.

Cindy

Marcellus Shale Project

Sue Warner

			Water Sample Requirements					
Group	**Analytes of interest**	**CAS #**	**Method**	**Minimal**	**Volume**	**Container Type**	**Preservation**	**HT**
Metals	includes Strontium and barium Al, Ca, Cr,Cu, Fe, Mg, Mn,Ni,Na,As, As, Se,Zn,Ti,Sr, Ba,Sn,Sb,Be,Cd,Co, ~~Mo~~, Tl, ~~Th~~, U, V		200.8	500 mL	1000 mL	Plastic Bottle	pH < 2 HNO3	6 Months
Mercury	Hg		245.1					
Anions	Sulfate as SO4		300.0	500 mL	400 mL	Glass or Plastic	Cool ≤ 6°C	28 Days
	Bromide		300					
	Chloride		300.0					
	Fluoride	16984-48-8	300.0					
	Nitrate as N		300.0					
	Nitrite as N		300.0					
	Orthophosphorus as P		300.0					
TSS	Total Suspended Solids		SM 2540D		500 mL	Glass or Plastic	Cool ≤ 6°C	7 Days
TDD	Total Dissolved Solids		SM 2540C		500 mL	Glass or Plastic	Cool ≤ 6°C	7 Days
pH	pH		SW9040C					
Alkalinity	(Total, Hardness, HCO3, CO3)		SM2320B		400 mL	Glass or Plastic	Cool ≤ 6°C	14 Days
	Total Phosphorus		365.1	500 mL	400 mL	Glass or Plastic	H2SO4 to pH<2, Cool ≤ 6°C	28 Days
Wet Chemistry	TKN		351.2	1500 mL for QC				
	Nitrate/Nitrite		353.2		400 mL	Glass or Plastic	H2SO4 to pH<2, Cool ≤ 6°C	28 Days
	Total Nitrogen		353.2					
VOC	Target Compound List plus TICs		CLP trace (0.5 ug/L (	160 mL	240 mL	6 Glass 40 mL vial w/Teflon lined cap	2 drops* of 1:1 HCl, Cool ≤ 6°C	14 Days
			Plus TICs	(360 mL for QC)			*If samples are expected to be alkaline, an additional 2 drops can be added ONLY if necessary	
	Acrylonitrile							

Total Phos

Marcellus Shale Project

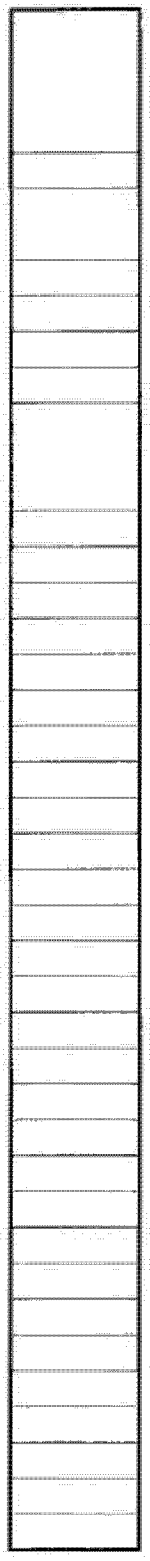
			Water Sample Requirements					
Group	**Analytes of interest**	**CAS #**	**Method**	**Minimal**	**Volume**	**Container Type**	**Preservation**	**HT**
SVOC	Target Compound List plus TICs		8270 Plus TICs	1 liter (for QC, Three 1 liter)	Two 1 liter	Amber glass	Cool ≤ 6°C	7 Days
FTIR	Screen for Unknowns			40 mL				
HPLC	Acrylonitrile Glycols 2-Butoxyethanol Screen for Unknowns		SW8316	40 mL	120 mL	3 Glass 40 mL vial w/Teflon lined cap	Cool ≤ 6°C	7 Days
GC	Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol		8015D	40 mL	120 mL	3 Glass 40 mL vial w/Teflon lined cap	Cool ≤ 6°C	7 Days
Bacteria	**Heterotrophic Plate Count**							

QC Requirements --

For each parameter, the laboratory will need 3 times the minimum volume for one sample per batch of

- **10 samples for inorganic parameters**
- **20 samples for organic parameters**

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
1-(1-naphthylmethyl)quinolinium chloride	65322-65-8	1
1,2,3-propanetricarboxylic acid, 2-hydroxy-, trisodium salt, dihydrate	4/3/6132	1
1,2,3-trimethylbenzene	526-73-8	1
1,2,4-trimethylbenzene	95-63-6	21
1,2-benzisothiazol-3	2634-33-5	1
1,2-dibromo-2,4-dicyanobutane	35691-65-7	1
1,2-ethanediaminium, N, N'-bis[2-[bis(2-hydroxyethyl)methylammonio]ethyl]-N,N'-bis(2-hydroxyethyl)-N,N'-dimethyl-,tetrachloride	138879-94-4	2
1,3,5-trimethylbenzene	108-67-8	3
1,6-hexanediamine dihydrochloride	6055-52-3	1
1,8-diamino-3,6-dioxaoctane	929-59-9	1
1-hexanol	111-27-3	1
1-methoxy-2-propanol	107-98-2	3
2,2`-azobis (2-amidopropane) dihydrochloride	2997-92-4	1
2,2-dibromo-3-nitrilopropionamide	10222-01-2	27
2-acrylamido-2-methylpropanesulphonic acid sodium salt polymer	*	1
2-bromo-2-nitropropane-1,3-diol	52-51-7	4
2-butanone oxime	96-29-7	1
2-hydroxypropionic acid	79-33-4	2
2-mercaptoethanol (Thioglycol)	60-24-2	13
2-methyl-4-isothiazolin-3-one	2682-20-4	4
2-monobromo-3-nitrilopropionamide	1113-55-9	1
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	2
2-phosphonobutane-1,2,4-tricarboxylic acid, potassium salt	93858-78-7	1
2-substituted aromatic amine salt	*	1
4,4'-diaminodiphenyl sulfone	80-08-0	3
5-chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	5
Acetaldehyde	75-07-0	1
Acetic acid	64-19-7	56
Acetic anhydride	108-24-7	7
Acetone	67-64-1	3
Acetophenone	98-86-2	1
Acetylenic alcohol	*	1
Acetyltriethyl citrate	77-89-4	1
Acrylamide	79-06-1	2
Acrylamide copolymer	*	1
Acrylamide copolymer	38193-60-1	1



Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Acrylate copolymer	*	1
Acrylic acid, 2-hydroxyethyl ester	818-61-1	1
Acrylic acid/2-acrylamido-methylpropylsulfonic acid copolymer	37350-42-8	1
Acrylic copolymer	403730-32-5	1
Acrylic polymers	*	1
Acrylic polymers	26006-22-4	2
Acyclic hydrocarbon blend	*	1
Adipic acid	124-04-9	6
Alcohol alkoxylate	*	5
Alcohol ethoxylates	*	2
Alcohols	*	9
Alcohols, C11-15-secondary, ethoxylated	68131-40-8	1
Alcohols, C12-14-secondary	126950-60-5	4
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	19
Alcohols, C12-15, ethoxylated	68131-39-5	2
Alcohols, C12-16, ethoxylated	103331-86-8	1
Alcohols, C12-16, ethoxylated	68551-12-2	3
Alcohols, C14-15, ethoxylated	68951-67-7	5
Alcohols, C9-11-iso-, C10-rich, ethoxylated	78330-20-8	4
Alcohols, C9-C22	*	1
Aldehyde	*	4
Aldol	107-89-1	1
Alfa-Alumina	*	5
Aliphatic acid	*	1
Aliphatic alcohol polyglycol ether	68015-67-8	1
Aliphatic amine derivative	120086-58-0	2
Alkaline bromide salts	*	2
Alkanes, C10-14	93924-07-3	2
Alkanes, C13-16-iso	68551-20-2	2
Alkanolamine	150-25-4	3
Alkanolamine chelate of zirconium alkoxide (Zirconium complex)	197980-53-3	4
Alkanolamine/aldehyde condensate	*	1
Alkenes	*	1
Alkenes, C>10 alpha-	64743-02-8	3
Alkenes, C>8	68411-00-7	2
Alkoxylated alcohols	*	1
Alkoxylated amines	*	6
Alkoxylated phenol formaldehyde resin	63428-92-2	1
Alkyaryl sulfonate	*	1
Alkyl (C12-16) dimethyl benzyl ammonium chloride	68424-85-1	7
Alkyl (C6-C12) alcohol, ethoxylated	68439-45-2	2
Alkyl (C9-11) alcohol, ethoxylated	68439-46-3	1
Alkyl alkoxylate	*	9
Alkyl amine	*	2

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Alkyl amine blend in a metal salt solution	*	1
Alkyl aryl amine sulfonate	255043-08-04	1
Alkyl benzenesulfonic acid	68584-22-5	2
Alkyl esters	*	2
Alkyl hexanol	*	1
Alkyl ortho phosphate ester	*	1
Alkyl phosphate ester	*	3
Alkyl quaternary ammonium chlorides	*	4
Alkylaryl sulfonate	*	1
Alkylaryl sulphonic acid	27176-93-9	1
Alkylated quaternary chloride	*	5
Alkylbenzenesulfonic acid	*	1
Alkylethoammonium sulfates	*	1
Alkylphenol ethoxylates	*	1
Almandite and pyrope garnet	1302-62-1	1
Aluminium isopropoxide	555-31-7	1
Aluminum	7429-90-5	2
Aluminum chloride	*	3
Aluminum chloride	1327-41-9	2
Aluminum oxide (alpha-Alumina)	1344-28-1	24
Aluminum oxide silicate	12068-56-3	1
Aluminum silicate (mullite)	1302-76-7	38
Aluminum sulfate hydrate	10043-01-3	1
Amides, tallow, n-[3-(dimethylamino)propyl],n-oxides	68647-77-8	4
Amidoamine	*	1
Amine	*	7
Amine bisulfite	13427-63-9	1
Amine oxides	*	1
Amine phosphonate	*	3
Amine salt	*	2
Amines, C14-18; C16-18-unsaturated, alkyl, ethoxylated	68155-39-5	1
Amines, coco alkyl, acetate	61790-57-6	3
Amines, polyethylenepoly-, ethoxylated, phosphonomethylated	68966-36-9	1
Amines, tallow alkyl, ethoxylated	61791-26-2	2
Amino compounds	*	1
Amino methylene phosphonic acid salt	*	1
Amino trimethylene phosphonic acid	6419-19-8	2
Ammonia	7664-41-7	7
Ammonium acetate	631-61-8	4
Ammonium alcohol ether sulfate	68037-05-8	1
Ammonium bicarbonate	1066-33-7	1
Ammonium bifluoride (Ammonium hydrogen difluoride)	1341-49-7	10
Ammonium bisulfate	7783-20-2	3
Ammonium bisulfite	10192-30-0	15

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Ammonium C6-C10 alcohol ethoxysulfate	68187-17-7	4
Ammonium C8-C10 alkyl ether sulfate	68891-29-2	4
Ammonium chloride	12125-02-9	29
Ammonium fluoride	12125-01-8	9
Ammonium hydroxide	1336-21-6	4
Ammonium nitrate	6484-52-2	2
Ammonium persulfate (Diammonium peroxidisulfate)	7727-54-0	37
Ammonium salt	*	1
Ammonium salt of ethoxylated alcohol sulfate	*	1
Amorphous silica	99439-28-8	1
Amphoteric alkyl amine	61789-39-7	1
Anionic copolymer	*	3
Anionic polyacrylamide	*	1
Anionic polyacrylamide	25085-02-3	6
Anionic polyacrylamide copolymer	*	3
Anionic polymer	*	2
Anionic polymer in solution	*	1
Anionic polymer, sodium salt	4/7/9003	1
Anionic water-soluble polymer	*	2
Antifoulant	*	1
Antimonate salt	*	1
Antimony pentoxide	1314-60-9	2
Antimony potassium oxide	29638-69-5	4
Antimony trichloride	10025-91-9	2
a-organic surfactants	61790-29-8	1
Aromatic alcohol glycol ether	*	2
Aromatic aldehyde	*	2
Aromatic ketones	224635-63-6	2
Aromatic polyglycol ether	*	1
Barium sulfate	7727-43-7	3
Bauxite	1318-16-7	16
Bentonite	1302-78-9	2
Benzene	71-43-2	3
Benzene, C10-16, alkyl derivatives	68648-87-3	1
Benzenecarboperoxoic acid, 1,1-dimethylethyl ester	614-45-9	1
Benzenemethanaminium	3844-45-9	1
Benzenesulfonic acid, C10-16-alkyl derivs., potassium salts	68584-27-0	1
Benzoic acid	65-85-0	11
Benzyl chloride	100-44-7	8
Biocide component	*	3
Bis(1-methylethyl)naphthalenesulfonic acid, cyclohexylamine	68425-61-6	1
Bishexamethylenetriamine penta methylene phosphonic acid	35657-77-3	1
Bisphenol A/Epichlorohydrin resin	25068-38-6	5
Bisphenol A/Novolac epoxy resin	28906-96-9	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Borate	12280-03-4	2
Borate salts	*	5
Boric acid	10043-35-3	18
Boric acid, potassium salt	20786-60-1	1
Boric acid, sodium salt	1333-73-9	2
Boric oxide	1303-86-2	1
b-tricalcium phosphate	7758-87-4	1
Butanedioic acid	2373-38-8	4
Butanol (n-Butanol)	71-36-3	3
Butyl glycidyl ether	8/6/2426	5
Butyl lactate	138-22-7	4
C10-C16 ethoxylated alcohol	68002-97-1	4
C-11 to C-14 n-alkanes, mixed	*	1
C12-C14 alcohol, ethoxylated	68439-50-9	3
Calcium carbonate	471-34-1	1
Calcium carbonate (Limestone)	1317-65-3	9
Calcium chloride	10043-52-4	17
Calcium chloride, dihydrate	10035-04-8	1
Calcium fluoride	7789-75-5	2
Calcium hydroxide	1305-62-0	9
Calcium hypochlorite	7778-54-3	1
Calcium oxide	1305-78-8	6
Calcium peroxide	1305-79-9	5
Carbohydrates	*	3
Carbon dioxide	124-38-9	4
Carboxymethyl guar gum, sodium salt	39346-76-4	7
Carboxymethyl hydroxypropyl guar	68130-15-4	11
Cellophane	9005-81-6	2
Cellulase	9012-54-8	7
Cellulase enzyme	*	1
Cellulose	9004-34-6	1
Cellulose derivative	*	2
Chloromethylnaphthalene quinoline quaternary amine	15619-48-4	3
Chlorous ion solution	*	2
Choline chloride	67-48-1	3
Chromates	*	1
Chromium (iii) acetate	1066-30-4	1
Cinnamaldehyde (3-phenyl-2-propenal)	104-55-2	5
Citric acid (2-hydroxy-1,2,3 propanetricarboxylic acid)	77-92-9	29
Citrus terpenes	94266-47-4	11
Coal, granular	50815-10-6	1
Cobalt acetate	71-48-7	1
Cocaidopropyl betaine	61789-40-0	2
Cocamidopropylamine oxide	68155-09-9	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Coco bis-(2-hydroxyethyl) amine oxide	61791-47-7	1
Cocoamidopropyl betaine	70851-07-9	1
Cocomidopropyl dimethylamine	68140-01-2	1
Coconut fatty acid diethanolamide	68603-42-9	1
Collagen (Gelatin)	9000-70-8	6
Complex alkylaryl polyo-ester	*	1
Complex aluminum salt	*	2
Complex organometallic salt	*	2
Complex substituted keto-amine	143106-84-7	1
Complex substituted keto-amine hydrochloride	*	1
Copolymer of acrylamide and sodium acrylate	25987-30-8	1
Copper	7440-50-8	1
Copper iodide	7681-65-4	1
Copper sulfate	7758-98-7	3
Corundum (Aluminum oxide)	1302-74-5	48
Crotonaldehyde	123-73-9	1
Crystalline silica - cristobalite	14464-46-1	44
Crystalline silica - quartz (SiO2)	14808-60-7	207
Crystalline silica, tridymite	15468-32-3	2
Cumene	98-82-8	6
Cupric chloride	7447-39-4	10
Cupric chloride dihydrate	10125-13-0	7
Cuprous chloride	7758-89-6	1
Cured acrylic resin	*	7
Cured resin	*	4
Cured silicone rubber-polydimethylsiloxane	63148-62-9	1
Cured urethane resin	*	3
Cyclic alkanes	*	1
Cyclohexane	110-82-7	1
Cyclohexanone	108-94-1	1
Decanol	112-30-1	2
Decyl-dimethyl amine oxide	2605-79-0	4
Dextrose monohydrate	50-99-7	1
D-Glucitol	50-70-4	1
Di (2-ethylhexyl) phthalate	117-81-7	3
Di (ethylene glycol) ethyl ether acetate	112-15-2	4
Diatomaceous earth	61790-53-2	3
Diatomaceous earth, calcined	91053-39-3	7
Dibromoacetonitrile	3252-43-5	1
Dibutylaminoethanol (2-dibutylaminoethanol)	102-81-8	4
Di-calcium silicate	10034-77-2	1
Dicarboxylic acid	*	1
Didecyl dimethyl ammonium chloride	7173-51-5	1
Diesel	*	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Diesel	68334-30-5	3
Diesel	68476-30-2	4
Diesel	68476-34-6	43
Diethanolamine (2,2-iminodiethanol)	111-42-2	14
Diethylbenzene	25340-17-4	1
Diethylene glycol	111-46-6	8
Diethylene glycol monomethyl ether	111-77-3	4
Diethylene triaminepenta (methylene phosphonic acid)	15827-60-8	1
Diethylenetriamine	111-40-0	2
Diethylenetriamine, tall oil fatty acids reaction product	61790-69-0	1
Diisopropylnaphthalenesulfonic acid	28757-00-8	2
Dimethyl formamide	68-12-2	5
Dimethyl glutarate	1119-40-0	1
Dimethyl silicone	*	2
Dioctyl sodium sulfosuccinate	577-11-7	1
Dipropylene glycol	25265-71-8	1
Dipropylene glycol monomethyl ether (2-methoxymethylethoxy propanc	34590-94-8	12
Di-secondary-butylphenol	53964-94-6	3
Disodium EDTA	139-33-3	1
Disodium ethylenediaminediacetate	38011-25-5	1
Disodium ethylenediaminetetraacetate dihydrate	6381-92-6	1
Disodium octaborate tetrahydrate	12008-41-2	1
Dispersing agent	*	1
d-Limonene	5989-27-5	11
Dodecyl alcohol ammonium sulfate	32612-48-9	2
Dodecylbenzene sulfonic acid	27176-87-0	14
Dodecylbenzene sulfonic acid salts	42615-29-2	2
Dodecylbenzene sulfonic acid salts	68648-81-7	7
Dodecylbenzene sulfonic acid salts	90218-35-2	1
Dodecylbenzenesulfonate isopropanolamine	42504-46-1	1
Dodecylbenzenesulfonic acid, monoethanolamine salt	26836-07-7	1
Dodecylbenzenesulphonic acid, morpholine salt	12068-08-5	1
EDTA/Copper chelate	*	2
EO-C7-9-iso-, C8-rich alcohols	78330-19-5	5
Epichlorohydrin	25085-99-8	5
Epoxy resin	*	5
Erucic amidopropyl dimethyl betaine	149879-98-1	3
Erythorbic acid	89-65-6	2
Essential oils	*	6
Ethanaminium, n,n,n-trimethyl-2-[(1-oxo-2-propenyl)oxy]-,chloride, poly	69418-26-4	4
Ethanol (Ethyl alcohol)	64-17-5	36
Ethanol, 2-(hydroxymethylamino)-	34375-28-5	1
Ethanol, 2, 2'-(Octadecylamino) bis-	10213-78-2	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Ethanoldiglycine disodium salt	135-37-5	1
Ether salt	25446-78-0	2
Ethoxylated 4-nonylphenol (Nonyl phenol ethoxylate)	26027-38-3	9
Ethoxylated alcohol	104780-82-7	1
Ethoxylated alcohol	78330-21-9	2
Ethoxylated alcohols	*	3
Ethoxylated alkyl amines	*	1
Ethoxylated amine	*	1
Ethoxylated amines	61791-44-4	1
Ethoxylated fatty acid ester	*	1
Ethoxylated nonionic surfactant	*	1
Ethoxylated nonyl phenol	*	8
Ethoxylated nonyl phenol	68412-54-4	10
Ethoxylated nonyl phenol	9016-45-9	38
Ethoxylated octyl phenol	68987-90-6	1
Ethoxylated octyl phenol	9002-93-1	1
Ethoxylated octyl phenol	9036-19-5	3
Ethoxylated oleyl amine	13127-82-7	2
Ethoxylated oleyl amine	26635-93-8	1
Ethoxylated sorbitol esters	*	1
Ethoxylated tridecyl alcohol phosphate	1/9/9046	2
Ethoxylated undecyl alcohol	127036-24-2	2
Ethyl acetate	141-78-6	4
Ethyl acetoacetate	141-97-9	1
Ethyl octynol (1-octyn-3-ol,4-ethyl-)	5877-42-9	5
Ethylbenzene	100-41-4	28
Ethylene glycol (1,2-ethanediol)	107-21-1	119
Ethylene glycol monobutyl ether (2-butoxyethanol)	111-76-2	126
Ethylene oxide	75-21-8	1
Ethylene oxide-nonylphenol polymer	*	1
Ethylenediaminetetraacetic acid	60-00-4	1
Ethylene-vinyl acetate copolymer	24937-78-8	1
Ethylhexanol (2-ethylhexanol)	104-76-7	18
Fatty acid ester	*	1
Fatty acid, tall oil, hexa esters with sorbitol, ethoxylated	61790-90-7	1
Fatty acids	*	1
Fatty alcohol alkoxylate	*	1
Fatty alkyl amine salt	*	1
Fatty amine carboxylates	*	1
Fatty quaternary ammonium chloride	61789-68-2	1
Ferric chloride	7705-08-0	3
Ferric sulfate	10028-22-5	7
Ferrous sulfate, heptahydrate	7782-63-0	4
Fluoroaliphatic polymeric esters	*	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Formaldehyde	50-00-0	12
Formaldehyde polymer	*	2
Formaldehyde, polymer with 4-(1,1-dimethyl)phenol, methylo:	30704-64-4	3
Formaldehyde, polymer with 4-nonylphenol and oxirane	30846-35-6	1
Formaldehyde, polymer with ammonia and phenol	35297-54-2	2
Formamide	75-12-7	5
Formic acid	64-18-6	24
Fumaric acid	110-17-8	8
Furfural	98-01-1	1
Furfuryl alcohol	98-00-0	3
Glass fiber	65997-17-3	3
Gluconic acid	526-95-4	1
Glutaraldehyde	111-30-8	20
Glycerol (1,2,3-Propanetriol, Glycerine)	56-81-5	16
Glycol ethers	*	9
Glycol ethers	9004-77-7	4
Glyoxal	107-22-2	3
Glyoxylic acid	298-12-4	1
Guar gum	9000-30-0	41
Guar gum derivative	*	12
Haloalkyl heteropolycycle salt	*	6
Heavy aromatic distillate	68132-00-3	1
Heavy aromatic petroleum naphtha	64742-94-5	45
Heavy catalytic reformed petroleum naphtha	64741-68-0	10
Hematite	*	5
Hemicellulase	9025-56-3	2
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine (Triazine)	4/4/4719	4
Hexamethylenetetramine	100-97-0	37
Hexanediamine	124-09-4	1
Hexanes	*	1
Hexylene glycol	107-41-5	5
Hydrated aluminum silicate	1332-58-7	4
Hydrocarbon mixtures	5/9/8002	1
Hydrocarbons	*	3
Hydrodesulfurized kerosine (petroleum)	64742-81-0	3
Hydrodesulfurized light catalytic cracked distillate (petroleum)	68333-25-5	1
Hydrodesulfurized middle distillate (petroleum)	64742-80-9	1
Hydrogen chloride (Hydrochloric acid)	7647-01-0	42
Hydrogen fluoride (Hydrofluoric acid)	7664-39-3	2
Hydrogen peroxide	7722-84-1	4
Hydrogen sulfide	6/4/7783	1
Hydrotreated and hydrocracked base oil	*	2
Hydrotreated heavy naphthenic distillate	64742-52-5	3
Hydrotreated heavy paraffinic petroleum distillates	64742-54-7	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Hydrotreated heavy petroleum naphtha	64742-48-9	7
Hydrotreated light petroleum distillates	64742-47-8	89
Hydrotreated middle petroleum distillates	64742-46-7	3
Hydroxyacetic acid (Glycolic acid)	79-14-1	6
Hydroxyethylcellulose	9004-62-0	1
Hydroxyethylethylenediaminetriacetic acid, trisodium salt	139-89-9	1
Hydroxylamine hydrochloride	11/1/5470	1
Hydroxypropyl guar gum	39421-75-5	2
Hydroxysultaine	*	1
Inner salt of alkyl amines	*	2
Inorganic borate	*	3
Inorganic particulate	*	1
Inorganic salt	*	1
Inorganic salt	533-96-0	1
Inorganic salt	7446-70-0	1
Instant coffee purchased off the shelf	*	1
Inulin, carboxymethyl ether, sodium salt	430439-54-6	1
Iron oxide	1332-37-2	2
Iron oxide (Ferric oxide)	1309-37-1	18
Iso amyl alcohol	123-51-3	1
Iso-alkanes/n-alkanes	*	10
Isobutanol (Isobutyl alcohol)	78-83-1	4
Isomeric aromatic ammonium salt	*	1
Isooctanol	26952-21-6	1
Isooctyl alcohol	68526-88-0	1
Isooctyl alcohol bottoms	68526-88-5	1
Isopropanol (Isopropyl alcohol, Propan-2-ol)	67-63-0	274
Isopropylamine	75-31-0	1
Isotridecanol, ethoxylated	9043-30-5	1
Kerosene	8008-20-6	13
Lactic acid	10326-41-7	1
Lactic acid	50-21-5	1
L-Dilactide	4511-42-6	1
Lead	7439-92-1	1
Light aromatic solvent naphtha	64742-95-6	11
Light catalytic cracked petroleum distillates	64741-59-9	1
Light naphtha distillate, hydrotreated	64742-53-6	1
Low toxicity base oils	*	1
Maghemite	*	2
Magnesium carbonate	546-93-0	1
Magnesium chloride	7786-30-3	4
Magnesium hydroxide	1309-42-8	4
Magnesium iron silicate	1317-71-1	3
Magnesium nitrate	10377-60-3	5

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Magnesium oxide	1309-48-4	18
Magnesium peroxide	1335-26-8	2
Magnesium peroxide	14452-57-4	4
Magnesium phosphide	12057-74-8	1
Magnesium silicate	1343-88-0	3
Magnesium silicate hydrate (talc)	14807-96-6	2
Magnetite	*	3
Medium aliphatic solvent petroleum naphtha	64742-88-7	10
Metal salt	*	2
Metal salt solution	*	1
Methanol (Methyl alcohol)	67-56-1	342
Methyl isobutyl carbinol (Methyl amyl alcohol)	108-11-2	3
Methyl salicylate	119-36-8	6
Methyl vinyl ketone	78-94-4	2
Methylcyclohexane	108-87-2	1
Mica	12001-26-2	3
Microcrystalline silica	1317-95-9	1
Mineral	*	1
Mineral Filler	*	1
Mineral spirits (stoddard solvent)	8052-41-3	2
Mixed titanium ortho ester complexes	*	1
Modified alkane	*	1
Modified cycloaliphatic amine adduct	*	3
Modified lignosulfonate	*	1
Monoethanolamine (Ethanolamine)	141-43-5	17
Monoethanolamine borate	26038-87-9	1
Morpholine	110-91-8	2
Mullite	1302-93-8	55
n,n-dibutylthiourea	109-46-6	1
N,N-dimethyl-1-octadecanamine-HCl	*	1
N,N-dimethyloctadecylamine	124-28-7	3
N,N-dimethyloctadecylamine hydrochloride	1613-17-8	2
n,n'-Methylenebisacrylamide	110-26-9	1
n-alkyl dimethyl benzyl ammonium chloride	139-08-2	1
Naphthalene	91-20-3	44
Naphthalene derivatives	*	1
Naphthalenesulphonic acid, bis (1-methylethyl)-methyl derivatives	99811-86-6	1
Natural asphalt	12002-43-6	1
n-cocoamidopropyl-n,n-dimethyl-n-2-hydroxypropylsulfobetaine	68139-30-0	1
n-dodecyl-2-pyrrolidone	2687-96-9	1
N-heptane	142-82-5	1
Nickel sulfate hexahydrate	10101-97-0	2
Nitrilotriacetamide	4862-18-4	4
Nitrilotriacetic acid	139-13-9	6

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Nitrilotriacetonitrile	7327-60-8	3
Nitrogen	7727-37-9	9
n-Methylpyrrolidone	872-50-4	1
Nonane, all isomers	*	1
Non-hazardous salt	*	1
Nonionic surfactant	*	1
Nonyl phenol ethoxylate	*	2
Nonyl phenol ethoxylate	9016-45-6	2
Nonyl phenol ethoxylate	9018-45-9	1
Nonylphenol	25154-52-3	1
Nonylphenol, ethoxylated and sulfated	9081-17-8	1
N-propyl zirconate	*	1
N-tallowalkyltrimethylenediamines	*	1
Nuisance particulates	*	2
Nylon fibers	25038-54-4	2
Octanol	111-87-5	2
Octyltrimethylammonium bromide	57-09-0	1
Olefinic sulfonate	*	1
Olefins	*	1
Organic acid salt	*	3
Organic acids	*	1
Organic phosphonate	*	1
Organic phosphonate salts	*	1
Organic phosphonic acid salts	*	6
Organic salt	*	1
Organic sulfur compound	*	2
Organic titanate	*	2
Organiophilic clay	*	2
Organo-metallic ammonium complex	*	1
Other inorganic compounds	*	1
Oxirane, methyl-, polymer with oxirane, mono-C10-16-alkyl ethers, phosphate	68649-29-6	1
Oxyalkylated alcohol	*	6
Oxyalkylated alcohols	228414-35-5	1
Oxyalkylated alkyl alcohol	*	1
Oxyalkylated alkylphenol	*	1
Oxyalkylated fatty acid	*	2
Oxyalkylated phenol	*	1
Oxyalkylated polyamine	*	1
Oxylated alcohol	*	1
Paraffin wax	8002-74-2	1
Paraffinic naphthenic solvent	*	1
Paraffinic solvent	*	5
Paraffins	*	1
Perlite	93763-70-3	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Petroleum distillates	*	26
Petroleum distillates	64742-65-0	1
Petroleum distillates	64742-97-5	1
Petroleum distillates	68477-31-6	3
Petroleum gas oils	*	1
Petroleum gas oils	64741-43-1	1
Phenol	108-95-2	5
Phenol-formaldehyde resin	9003-35-4	32
Phosphate ester	*	6
Phosphate esters of alkyl phenyl ethoxylate	68412-53-3	1
Phosphine	*	1
Phosphonic acid	*	1
Phosphonic acid	129828-36-0	1
Phosphonic acid	13598-36-2	3
Phosphonic acid (dimethlamino(methylene))	29712-30-9	1
Phosphonic acid, [nitrilotris(methylene)]tris-, pentasodium salt	2235-43-0	1
Phosphoric acid	7664-38-2	7
Phosphoric acid ammonium salt	*	1
Phosphoric acid, mixed decyl, octyl and ethyl esters	68412-60-2	3
Phosphorous acid	10294-56-1	1
Phthalic anhydride	85-44-9	2
Pine oil	9/3/8002	5
Plasticizer	*	1
Poly(oxy-1,2-ethanediyl)	24938-91-8	1
Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched (Nonylp	127087-87-0	3
Poly(oxy-1,2-ethanediyl), alpha-hydro-omega-hydroxy	65545-80-4	1
Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-(hexyloxy)-, ammonium salt	63428-86-4	3
Poly(oxy-1,2-ethanediyl),a-(nonylphenyl)-w-hydroxy-, phosphate	51811-79-1	1
Poly-(oxy-1,2-ethanediyl)-alpha-undecyl-omega-hydroxy	34398-01-1	6
Poly(sodium-p-styrenesulfonate)	25704-18-1	1
Poly(vinyl alcohol)	25213-24-5	2
Polyacrylamides	5/8/9003	2
Polyacrylamides	*	1
Polyacrylate	*	1
Polyamine	*	2
Polyanionic cellulose	*	2
Polyepichlorohydrin, trimethylamine quaternized	51838-31-4	1
Polyetheramine	9046-10-0	3
Polyether-modified trisiloxane	27306-78-1	1
Polyethylene glycol	25322-68-3	20
Polyethylene glycol mono[4-(1,1,3,3-tetramethylbutyl)phenyl]ether	*9002-93-1*	*??*
Polyethylene glycol ester with tall oil fatty acid	2/1/9005	1
Polyethylene polyammonium salt	68603-67-8	2
Polyethylene-polypropylene glycol	11/6/9003	5

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Polylactide resin	*	3
Polyoxyalkylenes	*	1
Polyoxyethylene castor oil	61791-12-6	1
Polyphosphoric acid, esters with triethanolamine, sodium salts	68131-72-6	1
Polypropylene glycol	25322-69-4	1
Polysaccharide	*	20
Polyvinyl alcohol	*	1
Polyvinyl alcohol	9002-89-5	2
Polyvinyl alcohol/polyvinylacetate copolymer	*	1
Potassium acetate	127-08-2	1
Potassium carbonate	584-08-7	12
Potassium chloride	7447-40-7	29
Potassium formate	590-29-4	3
Potassium hydroxide	1310-58-3	25
Potassium iodide	7681-11-0	6
Potassium metaborate	13709-94-9	3
Potassium metaborate	16481-66-6	3
Potassium oxide	12136-45-7	1
Potassium pentaborate	*	1
Potassium persulfate	7727-21-1	9
Propanol (Propyl alcohol)	71-23-8	18
Propanol, [2(2-methoxy-methylethoxy) methylethoxyl]	20324-33-8	1
Propargyl alcohol (2-propyn-1-ol)	107-19-7	46
Propylene carbonate (1,3-dioxolan-2-one, methyl-)	108-32-7	2
Propylene glycol (1,2-propanediol)	57-55-6	18
Propylene oxide	75-56-9	1
Propylene pentamer	15220-87-8	1
p-Xylene	106-42-3	1
Pyridinium, 1-(phenylmethyl)-, ethyl methyl derivatives, chlorides	68909-18-2	9
Pyrogenic silica	112945-52-5	3
Quaternary amine compounds	*	3
Quaternary amine compounds	61789-18-2	1
Quaternary ammonium compounds	*	9
Quaternary ammonium compounds	19277-88-4	1
Quaternary ammonium compounds	68989-00-4	1
Quaternary ammonium compounds	8030-78-2	1
Quaternary ammonium compounds, dicoco alkyldimethyl, chlorid	61789-77-3	2
Quaternary ammonium salts	*	2
Quaternary compound	*	1
Quaternary salt	*	2
Quaternized alkyl nitrogenated compound	68391-11-7	2
Rafinnates (petroleum), sorption process	64741-85-1	2
Residues (petroleum), catalytic reformer fractionator	64741-67-9	10
Resin	9/7/8050	2

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Rutile	1317-80-2	2
Salt of phosphate ester	*	3
Salt of phosphono-methylated diamine	*	1
Salts of oxyalkylated fatty amines	68551-33-7	1
Secondary alcohol	*	7
Silica (Silicon dioxide)	7631-86-9	47
Silica, amorphous	*	3
Silica, amorphous precipitated	67762-90-7	1
Silicon carboxylate	681-84-5	1
Silicon dioxide (Fused silica)	60676-86-0	7
Silicone emulsion	*	1
Sodium (C14-16) olefin sulfonate	68439-57-6	4
Sodium 2-ethylhexyl sulfate	126-92-1	1
Sodium acetate	127-09-3	6
Sodium acid pyrophosphate	7758-16-9	5
Sodium alkyl diphenyl oxide sulfonate	28519-02-0	1
Sodium aluminate	1302-42-7	1
Sodium aluminum phosphate	7785-88-8	1
Sodium bicarbonate (Sodium hydrogen carbonate)	144-55-8	10
Sodium bisulfite	7631-90-5	6
Sodium bromate	7789-38-0	10
Sodium bromide	7647-15-6	1
Sodium carbonate	497-19-8	14
Sodium chlorate	9/9/7775	1
Sodium chloride	7647-14-5	48
Sodium chlorite	7758-19-2	8
Sodium cocaminopropionate	68608-68-4	2
Sodium diacetate	126-96-5	2
Sodium erythorbate	6381-77-7	4
Sodium glycolate	2836-32-0	2
Sodium hydroxide (Caustic soda)	1310-73-2	80
Sodium hypochlorite	7681-52-9	14
Sodium lauryl-ether sulfate	68891-38-3	3
Sodium metabisulfite	7681-57-4	1
Sodium metaborate	7775-19-1	2
Sodium metaborate tetrahydrate	35585-58-1	6
Sodium metasilicate, anhydrous	6834-92-0	2
Sodium nitrite	7632-00-0	1
Sodium oxide (Na2O)	1313-59-3	1
Sodium perborate	1113-47-9	1
Sodium perborate	4/4/7632	1
Sodium perborate tetrahydrate	10486-00-7	4
Sodium persulfate	7775-27-1	6
Sodium phosphate	*	2

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Sodium polyphosphate	68915-31-1	1
Sodium salicylate	54-21-7	1
Sodium silicate	1344-09-8	2
Sodium sulfate	7757-82-6	7
Sodium tetraborate	1330-43-4	7
Sodium tetraborate decahydrate	1303-96-4	10
Sodium thiosulfate	7772-98-7	10
Sodium thiosulfate pentahydrate	10102-17-7	3
Sodium trichloroacetate	650-51-1	1
Sodium tripolyphosphate	7758-29-4	2
Sodium xylene sulfonate	1300-72-7	3
Sodium zirconium lactate	174206-15-6	1
Solvent refined heavy naphthenic petroleum distillates	64741-96-4	1
Sorbitan monooleate	1338-43-8	1
Stabilized aqueous chlorine dioxide	10049-04-4	1
Stannous chloride	7772-99-8	1
Stannous chloride dihydrate	10025-69-1	6
Starch	9005-25-8	5
Steam cracked distillate, cyclodiene dimer, dicyclopentadiene polymer	68131-87-3	1
Steam-cracked petroleum distillates	64742-91-2	6
Straight run middle petroleum distillates	64741-44-2	5
Substituted alcohol	*	2
Substituted alkene	*	1
Substituted alkylamine	*	2
Sucrose	57-50-1	1
Sulfamic acid	5329-14-6	6
Sulfate	*	1
Sulfonate acids	*	1
Sulfonate surfactants	*	1
Sulfonic acid salts	*	1
Sulfonic acids, petroleum	61789-85-3	1
Sulfur compound	*	1
Sulfuric acid	7664-93-9	9
Sulfuric acid, monodecyl ester, sodium salt	142-87-0	2
Sulfuric acid, monooctyl ester, sodium salt	142-31-4	2
Surfactants	*	13
Sweetened middle distillate	64741-86-2	1
Synthetic organic polymer	9051-89-2	2
Tall oil (Fatty acids)	61790-12-3	4
Tall oil, compound with diethanolamine	68092-28-4	1
Tallow soap	*	2
Tar bases, quinoline derivatives, benzyl chloride-quaternized	72480-70-7	5
Tergitol	68439-51-0	1
Terpene hydrocarbon byproducts	68956-56-9	3

Chemical Component	ChemAbstract Service Number	Products Containing Chemical
Terpenes	*	1
Terpenes and terpenoids, sweet orange-oil	68647-72-3	2
Terpineol	8000-41-7	1
Tert-butyl hydroperoxide	75-91-2	6
Tetra-calcium-alumino-ferrite	12068-35-8	1
Tetraethylene glycol	112-60-7	1
Tetraethylenepentamine	112-57-2	2
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Dazomet)	533-74-4	13
Tetrakis (hydroxymethyl) phosphonium sulfate	55566-30-8	12
Tetramethyl ammonium chloride	75-57-0	14
Tetrasodium 1-hydroxyethylidene-1,1-diphosphonic acid	3794-83-0	1
Tetrasodium ethylenediaminetetraacetate	64-02-8	10
Thiocyanate sodium	540-72-7	1
Thioglycolic acid	68-11-1	6
Thiourea	62-56-6	9
Thiourea polymer	68527-49-1	3
Titanium complex	*	1
Titanium oxide	13463-67-7	19
Titanium, isopropoxy (triethanolaminate)	74665-17-1	2
Toluene	108-88-3	29
Treated ammonium chloride (with anti-caking agent a or b)	12125-02-9	1
Tributyl tetradecyl phosphonium chloride	81741-28-8	5
Tri-calcium silicate	12168-85-3	1
Tridecyl alcohol	112-70-9	1
Triethanolamine (2,2,2-nitrilotriethanol)	102-71-6	21
Triethanolamine polyphosphate ester	68131-71-5	3
Triethanolamine titanate	36673-16-2	1
Triethanolamine zirconate	101033-44-7	6
Triethanolamine zirconium chelate	*	1
Triethyl citrate	77-93-0	1
Triethyl phosphate	78-40-0	1
Triethylene glycol	112-27-6	3
Triisopropanolamine	122-20-3	5
Trimethylammonium chloride	593-81-7	1
Trimethylbenzene	25551-13-7	5
Trimethyloctadecylammonium (1-octadecanaminium, N,N,N-trimethyl-, chlorid	112-03-8	6
Tris(hydroxymethyl)aminomethane	77-86-1	1
Trisodium ethylenediaminetetraacetate	150-38-9	1
Trisodium ethylenediaminetriacetate	19019-43-3	1
Trisodium nitrilotriacetate	18662-53-8	8
Trisodium nitrilotriacetate (Nitrilotriacetic acid, trisodium salt monohydrate)	5064-31-3	9
Trisodium ortho phosphate	7601-54-9	1
Trisodium phosphate dodecahydrate	10101-89-0	1
Ulexite	1319-33-1	1

Chemical Component	Chemical Abstract Service Number	No. of Products Containing Chemical
Urea	57-13-6	3
Wall material	*	1
Walnut hulls	*	2
White mineral oil	8042-47-5	8
Xanthan gum	11138-66-2	6
Xylene	1330-20-7	44
Zinc chloride	7646-85-7	1
Zinc oxide	1314-13-2	2
Zirconium complex	*	10
Zirconium dichloride oxide	7699-43-6	1
Zirconium oxide sulfate	62010-10-0	2
Zirconium sodium hydroxy lactate complex (Sodi	113184-20-6	2

* Components marked with an asterisk appeared on at least one MSDS without an identifying CAS number. The MSDSs in these cases marked the CAS as proprietary, noted that the CAS was not available, or left the CAS field blank. Components marked with an asterisk may be duplicative of other components on this list, but Committee staff have no way of identifying such duplicates without the identifying CAS number.

C14 isotope (biogentic v. thermo)		
Heterotrophic Plate Count (HPC) Bacteria,		
O, H stable isotopes of water		
$\delta^{13}C$ of inorganic carbon		
$\delta^{13}C$ and $\delta^{2}H$ of methane		
$^{87}Sr/^{86}Sr$ analysis		
Total isotopic U		
Ra-226		
Ra-228		

RE: Attachments for lab support for Dimock

Nance, Gene to: Stevie Wilding, Richard Rupert 01/05/2012 02:46 PM
Cynthia Caporale, Cynthia Metzger, Jennifer Gundersen, Kevin Martin,
Cc: Mike Mahoney, Sue Warner, Fred Foreman, Jill Bilyeu, "Graves, Suddha",
"Carter, Joe"

From: "Nance, Gene" <Gnance@TechLawInc.com>

To: Stevie Wilding/ESC/R3/USEPA/US, Richard Rupert/R3/USEPA/US

Cc: Cynthia Caporale/ESC/R3/USEPA/US@EPA, Cynthia Metzger/ESC/R3/USEPA/US@EPA, Jennifer Gundersen/ESC/R3/USEPA/US@EPA, Kevin Martin/ESC/R3/USEPA/US@EPA, Mike Mahoney/ESC/R3/USEPA/US@EPA, Sue Warner/ESC/R3/USEPA/US@EPA, Fred

Stevie,
Thanks. I will add the Dissolved Gases, DRO, and GRO to the draft analytical request. I was waiting until we had a 'final' list of parameters to submit it through Client Services.

Gene Nance
TechLaw, Inc.
740.867.0968 (office)
304.830.1442 (mobile)

—Original Message—
From: Stevie Wilding [mailto:Wilding.Stevie@epamail.epa.gov]
Sent: Thursday, January 05, 2012 2:25 PM
To: Richard Rupert; Nance, Gene
Cc: Cynthia Caporale; Cynthia Metzger; Jennifer Gundersen; Kevin Martin; Mike Mahoney; Sue Warner; Fred Foreman; Jill Bilyeu
Subject: Attachments for lab support for Dimock

List of Analytes and QL from Region 3.

(See attached file: Dimock RLs.XLS)

A couple of changes to the ARF; 1. Glycol method will be Modified 8321. 2. Special Instructions – Samples will be screened for orthophosphorus and based on screening results – samples will be analyzed for Total Phosphorus.

Region 9 lab will do analysis for GRO, DRO and Dissolved Gases. Attached are their SOPs and QL

(See attached file: SOP275 R5.pdf)(See attached file: SOP 325 R2.pdf)
(See attached file: SOP 380 R7.pdf)(See attached file: SOP 385 R4.pdf)
(See attached file: dimrock.xls)

I Edited the table of the parameters and labs.

(See attached file: Dimock Parameters and Labs Jan04 2012.xlsx)

Stevie Wilding, Chemist
Environmental Science Center
Analytical Services Branch
(410) 305-2606

"Our lives begin to end the day we become silent about things that matter."
– Martin Luther King, Jr. –

Coolers
Tags [Coolers]
Bottles
Tags [Samples]

- Need An Address for the work
- Sampling From 21 homes

Regional Lab Addresses for R2 R9

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Parameter/Method	Lab	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
					Dup	Trip[1] Blanks	Rinsate[1,2] Blanks	Field[2] Blanks	MS/MSD	
Alkalinity (SM 2320B) (Total Hardness, HCO3, CO3) (2320B, 2340B)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	?	drinking water	60	0	6	0	0	5	3	71
Anions, Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4 (300.0)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Glycols incl. 2-Butoxyethanol (8321 Modified)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.8/245.1)	Ft. Meade	drinking water	60	0	6	0	0	5	6	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.8/245.1)	Ft. Meade	Filtered drinking water	60	0	6	0	0	5	6	71
pH (9040C)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Phosphorus, Total (365.1)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Nitrate/Nitrite (353.2)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Semi-Volatiles (TCL plus TICs) (CLP Trace plus TICS) (OLC03.2)	Ft. Meade	drinking water	60	0	6	0	0	5	3	71
1-methylnapthalene (8270 or equivalent)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Volatiles incl. Acrylonitrile (TCL plus TICs) (CLP Trace - 0.5 ug/L QL) (OLC03.2)	Ft. Meade	drinking water	60	0	6	1 per cooler	0	5	3	71 + Trip Blanks for Coolers
Solids, Total Dissolved (TDS) (2540C)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Solids, Total Suspended (TSS) (2540D)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Bacteria (total coliform, HPC)	TechLaw	drinking water	60	0	6	0	0	5	0	71
$d^{13}C$ and $d^{2}H$ of methane (isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
$d^{13}C$ of inorganic carbon (isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10

We can't do this but may need a back up regional lab

Contract No. EP-S3-10-14

Stable isotopes of water (O,H) (isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Complete compositional analysis of headspace gas (isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Diss. gases methane, ethane, ethene (isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Dissolved Gases, Methane, Ethane, & Ethene (RSK-175)	Region 9	drinking water	60	0	6	0	0	5	0	71
DRO (8015M)	Region 9	drinking water	60	0	6	0	0	5	0	71
GRO (8015M)	Region 9	drinking water	60	0	6	0	0	5	0	71
Gamma Spec (K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238) (901.1)	NAREL	drinking water	60	0	6	0	0	5	0	71
Gross Alpha/Beta (900.0)	NAREL	drinking water	60	0	6	0	0	5	0	71
Ethylene Glycol (8015M)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
2-Methoxyethanol (8015B)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Methylene Blue Active Substances (MBAS) (SM 5540C)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Oil & Grease (HEM) (1664A)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Ra-226 (903.1)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Ra-228 (904.0)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Turbidity, Nephelometric (180.1)	TechLaw	drinking water	60	0	6	0	0	5	0	71

We might see these as TICs

Trying to do this as glycols

R8

R9

done in the field

Notes:

1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:

Bkgd = Background

MS/MSD = Matrix Spike/Matrix Spike Duplicate

Dup = Duplicate

QA/QC = Quality assurance/quality control

Sr = Strontium

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Parameter/Method	Lab	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
					Dup	Trip[1] Blanks	Rinsate[1,2] Blanks	Field[2] Blanks	MS/MSD	
Alkalinity (SM 2320B) (Total Hardness, HCO3, CO3) (2320B, 2340B)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	?	drinking water	60	0	6	0	0	5	3	71
Anions, Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4 (300.0)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Glycols incl. 2-Butoxyethanol (8321 Modified)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Tl, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.8/245.1)	Ft. Meade	drinking water	60	0	6	0	0	5	6	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Tl, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.8/245.1)	Ft. Meade	Filtered drinking water	60	0	6	0	0	5	6	71
pH (9040C)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Phosphorus, Total (365.1)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Nitrate/Nitrite (353.2)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Semi-Volatiles (TCL plus TICs) (CLP Trace plus TICS) (OLC03.2)	Ft. Meade	drinking water	60	0	6	0	0	5	3	71
1-methylnapthalene (8270 or equivalent)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Volatiles incl. Acrylonitrile (TCL plus TICs) (CLP Trace - 0.5 ug/L QL) (OLC03.2)	Ft. Meade	drinking water	60	0	6	1 per cooler	0	5	3	71 + Trip Blanks for Coolers
Solids, Total Dissolved (TDS) (2540C)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Solids, Total Suspended (TSS) (2540D)	Ft. Meade	drinking water	60	0	6	0	0	5	0	71
Bacteria (total coliform, HPC)	TechLaw	drinking water	60	0	6	0	0	5	0	71
$d^{13}C$ and $d^{2}H$ of methane (Isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
$d^{13}C$ of inorganic carbon (Isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Stable isotopes of water (O,H) (Isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Complete compositional analysis of headspace gas (Isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Diss. gases methane, ethane, ethene (Isotech)	Isotech	drinking water	10	0	0	0	0	0	0	10
Dissolved Gases, Methane, Ethane, & Ethene (RSK 175)	Region 9	drinking water	60	0	6	0	0	5	0	71
DRO (8015M)	Region 9	drinking water	60	0	6	0	0	5	0	71
GRO (8015M)	Region 9	drinking water	60	0	6	0	0	5	0	71
Gamma Spec (K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238) (901.1)	NAREL	drinking water	60	0	6	0	0	5	0	71
Gross Alpha/Beta (900.0)	NAREL	drinking water	60	0	6	0	0	5	0	71
Ethylene Glycol (8015M)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
2-Methoxyethanol (8015B)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Methylene Blue Active Substances (MBAS) (SM 5540C)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Oil & Grease (HEM) (1664A)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Ra-226 (903.1)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Ra-228 (904.0)	TechLaw Pace	drinking water	60	0	6	0	0	5	0	71
Turbidity, Nephelometric (180.1)	TechLaw	drinking water	60	0	6	0	0	5	0	71

Notes:

1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:

Bkgd = Background

QA/QC = Quality assurance/quality control

MS/MSD = Matrix Spike/Matrix Spike Duplicate

Sr = Strontium

Dup = Duplicate

Contract No. EP-S3-10-14

TABLE 1 - 01/05/12
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary				Total Field and QA/QC Analyses (not including MS/MSD)[3]
				Dup	Trip[2] Blanks	Field[2] Blanks	MS/MSD	
Ft. Meade								
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	60	0	6	0	5	4	71
Anions: Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	60	0	6	0	5	7	71
Glycols incl. 2-Butoxyethanol (8316)	drinking water	60	0	6	0	5	4	71
Metals: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	drinking water	60	0	6	0	5	7	71
Metals, Dissolved: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	Filtered drinking water	60	0	6	0	5	7	71
Wet Chemistry: - Phosphorus, Total (365.1); - Nitrate/Nitrite (353.2); - Nitrogen, Total (353.2)	drinking water	60	0	6	0	5	7	71
Semi-Volatiles (TCL plus TICs) (OLC03.2)	drinking water	60	0	6	0	5	4	71
Solids, Total Dissolved (TDS) (SM 2540C)	drinking water	60	0	6	0	5	7	71
Solids, Total Suspended (TSS) (SM 2540D)	drinking water	60	0	6	0	5	7	71
Volatiles + Acrylonitrile (TCL + TICs, CLP Trace - 0.5 ug/L QL) (OLC03.2)	drinking water	60	0	6	1 per cooler	5	4	71 + Trip Blanks for Coolers
Tier IV								
Isotech - d13C and d2H of methane; - Complete compositional analysis of headspace gas; - Stable isotopes of water (O,H)	drinking water	9	1	0	0	0	0	10
Tier IV								
Bacteria (fecal & total coliform, HPC) (SM 9222B; SM 9215B w/R2A medium)	drinking water	60	0	6	0	5	0	71
NARET								
Alpha Spec (Th-232, Th-228, Th-230) (DOE HASL 300)	drinking water	60	0	6	0	5	0	71
Alpha Spec (U-234, U-235, U-236, U-238) (DOE HASL 300)	drinking water	60	0	6	0	5	0	71
Gamma Spec Bi-212, Bi-214, K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238 (901.1)	drinking water	60	0	6	0	5	0	71
Gross Alpha/Beta (900.0)	drinking water	60	0	6	0	5	0	71
Ra-226 (903.1)	drinking water	60	0	6	0	5	0	71
Ra-228 (904.0)	drinking water	60	0	6	0	5	0	71
Rn-222 (SM 7500-Rn)	drinking water	60	0	6	0	5	0	71
Tier IV								
1-methylnapthalene (8270 or equivalent)	drinking water	60	0	6	0	5	4	71
2-Methoxyethanol (8015B)	drinking water	60	0	6	0	5	4	71
Dissolved Gases, Methane, Ethane, Ethene, Propane, Butane (RSK-175)	drinking water	60	0	6	0	5	4	71
DRO (8015M)	drinking water	60	0	6	0	5	4	71
Ethylene Glycol (8015M)	drinking water	60	0	6	0	5	4	71
GRO (8015M)	drinking water	60	0	6	0	5	4	71
Methylene Blue Active Substances (MBAS) (SM 5540C)	drinking water	60	0	6	0	5	0	71
Oil & Grease (HEM) (1664A)	drinking water	60	0	6	0	5	0	71

Notes:
1. This QA sample will be an aqueous matrix.
2. Samples to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
QA/QC = Quality assurance/quality control
Dup = Duplicate

TABLE 2 - 01/05/12
SAMPLE ANALYTICAL REQUIREMENTS SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Analytical parameter and Method	Matrix	Sample Preservation	Holding Time	Sample Container(s)	Total QC Volume (Includes Field Sample Volume)
Ft. Meade					
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	Ice, 6°C	7 days	Two 40-ml glass vials (Fill to capacity with no head space)	Five 40-ml glass vials
Anions: Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	Ice, 6°C	28 days	One 500-ml HDPE	Two 500-ml HDPE
Glycols incl. 2-Butoxyethanol (8316)	drinking water	Ice, 6°C	7 days	One 40-ml glass vial (Fill to capacity with no head space)	Three 40-ml glass vials
Metals: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 500-ml HDPE	Three 500-ml HDPE
Metals, Dissolved: Al, B, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg (200.7/200.8/245.1)	(filtered) drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 500-ml HDPE	Three 500-ml HDPE
Wet Chemistry: - Phosphorus, Total (365.1); - Nitrate/Nitrite (353.2); - Nitrogen; Total (353.2)	drinking water	pH<2, H2SO4, and cool with ice, 4°C	28 days	One 500-ml HDPE	Three 500-ml HDPE
Semi-Volatiles (TCL plus TICs) (OLC03.2)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids	Five 1-Liter amber glass bottles
Solids, Total Dissolved (TDS) (SM 2540C)	drinking water	Ice, 6°C	7 days	One 500-ml HDPE	Two 500-ml HDPE
Solids, Total Suspended (TSS) (SM 2540D)	drinking water	Ice, 6°C	7 days	One 500-ml HDPE	Two 500-ml HDPE
Volatiles + Acrylonitrile (TCL + TICs, CLP Trace - 0.5 ug/L QL) (OLC03.2)	drinking water	2 drops of 1:1 HCl, pH<2, Ice, 6°C	14 days	Four 40-ml glass vials w/Teflon lined cap (no head space)	Twelve 40-ml glass vials
Tier IV					
Isotech - d13C and d2H of methane; - Complete compositional analysis of headspace gas; - Stable isotopes of water (O,H)	drinking water	Ice, 4°C, biocide pill in sample container	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Tier IV					
Bacteria (fecal & total coliform, HPC) (SM 9222B; SM 9215B w/R2A medium)	drinking water	Ice, 4°C (.008% Na2S2O3 if residual Cl- present)	6 hours	One 125 ml Pre-sterilized polypropylene	No MS/MSD Req'd
MAREL					
Alpha Spec (Th-232, Th-228, Th-230) (DOE HASL 300)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Alpha Spec (U-234, U-235, U-236, U-238) (DOE HASL 300)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Gamma Spec Bi-212, Bi-214, K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238 (901.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Gross Alpha/Beta (900.0)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Ra-226 (903.1)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Ra-228 (904.0)	drinking water	pH<2 with HNO3 and cool with ice, 4°C	6 months	One 1-Liter HDPE	No MS/MSD Req'd
Rn-222 (SM 7500-Rn)	drinking water	Ice, 4°C	72 hours	Three 40-ml glass vial	No MS/MSD Req'd
Tier IV					
1-methylnapthalene (8270 or equivalent)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids	Six 1-Liter Amber
2-Methoxyethanol (8015B)	drinking water	Ice, 6°C	7 days	Two 1-Liter amber glass jars with teflon-lined lids	Six 1-Liter Amber
Dissolved Gases, Methane, Ethane, Ethene, Propane, Butane (RSK-175)	drinking water	pH<2 with HCl and cool with ice, 4°C	7 days	Two 40-ml glass vial	Six 40-ml glass vial
DRO (8015M)	drinking water	Ice, 4°C	7 days extract	Two 1-Liter amber glass jars with teflon-lined lids	Six 1-Liter Amber
Ethylene Glycol (8015M)	drinking water	Ice, 4°C	7 days	Two 40-ml glass vials (Fill to capacity with no head space)	Six 40-ml Glass vials
GRO (8015M)	drinking water	pH<2 with HCl and cool with ice, 4°C	14 days	Two 40-ml glass vials (Fill to capacity with no head space)	Six 40-ml Glass vials
Methylene Blue Active Substances (MBAS) (SM 5540C)	drinking water	Ice, 4°C	48 hours	One 500-ml HDPE	No MS/MSD Req'd
Oil & Grease (HEM) (1664A)	drinking water	pH<2, H2SO4, and cool with ice, 4°C	28 days	One 1-Liter amber glass jars with teflon-lined lids	No MS/MSD Req'd

KEY:

°C = degrees Celsius
C14 = Carbon 14 Isotope
CLP = Contract Lab Program
D13C = delta of carbon-13
D2H = delta of deuterium
H2SO4 = Sulfuric Acid

HDPE = High density polyethylene
HNO3 = Nitric Acid
HPC = Heterotrophic Plate Count
ml = milliliter
Na2S2O3 = Sodium Thiosulfate
pH = potential Hydrogen

QL = Quantitation Limit
Sr = Strontium
TCL = Target Compound List
TICs = Tentatively Identified Compounds
ug/L = micrograms per liter

Contract No. EP-S3-10-14

4 Sample Sets Friday — Group Meeting At 3:30 — 1/6/12

Poc for sampling to other Regions

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Need An Answer for what's required — **Fort Meade Lab** — Prep Methods should be on the ARF

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
				Dup	Trip[1] Blanks	Rinsate[1,2] Blanks	Field[1] Blanks	MS/MSD	
Alkalinity (SM 2320B) (Total Hardness, HCO3, CO3) (2320B, 2340B)	drinking water	60	0	6	0	0	5	0	71
Alcohols: Ethanol, methanol, 1-propanol, 1-butanol, 2-butanol (8015D)	drinking water	60	0	6	0	0	5	3	71
Anions, Chloride, Bromide, Fluoride, Nitrate/Nitrite as N, Orthophosphorus as P, Sulfate as SO4 (300.0)	drinking water	60	0	6	0	0	5	0	71
Glycols incl. 2-Butoxyethanol (8321 Modified)	drinking water	60	0	6	0	0	5	0	71
Ethylene Glycol (8015M)	drinking water	60	0	6	0	0	5	0	71
2-Methoxyethanol (8015B)	drinking water	60	0	6	0	0	5	0	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Tl, Sr, Ba, Sn, Sb, Be, Cd, Co, Ti, U, V, K, Hg, Li (200.8/245.1)	drinking water	60	0	6	0	0	5	6	71
Metals: Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni, Na, As, Se, Zn, Ti, Sr, Ba, Sn, Sb, Be, Cd, Co, Tl, U, V, K, Hg, Li (200.8/245.1)	Filtered drinking	60	0	6	0	0	5	6	71
pH (9040C)	drinking water	60	0	6	0	0	5	0	71
Phosphorus, Total (365.1)	drinking water	60	0	6	0	0	5	0	71
Nitrate/Nitrite (353.2)	drinking water	60	0	6	0	0	5	0	71
Semi-Volatiles (TCL plus TICs) (CLP Trace plus TICS) (OLC03.2)	drinking water	60	0	6	0	0	5	3	71
1-methylnapthalene (8270 or equivalent)	drinking water	60	0	6	0	0	5	0	71
Volatiles Incl. Acrylonitrile (TCL plus TICs) (CLP Trace - 0.5 ug/L QL) (OLC03.2)	drinking water	60	0	6	1 per cooler	0	5	3	71 + Trip Blanks for Coolers
Oil & Grease (HEM) (1664A)	drinking water	60	0	6	0	0	5	0	71
Solids, Total Dissolved (TDS) (2540C)	drinking water	60	0	6	0	0	5	0	71
Solids, Total Suspended (TSS) (2540D)	drinking water	60	0	6	0	0	5	0	71

Notes:
1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
Dup = Duplicate
QA/QC = Quality assurance/quality control
Sr = Strontium

Which ones are table 1 and what's "On Demand" so Rich will know what is clear what we get

Contract No. EP-S3-10-14

Tech Lab will send directly to [redacted]

Need Address and PO for each of the Regions

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

EPA Region 9 Lab

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
				Dup	Trip[1] Blanks	Rinsate[1&2] Blanks	Field[2] Blanks	MS/MSD	
Dissolved Gases, Methane, Ethane, & Ethene (RSK-175)	drinking water	60	0	6	0	0	5	0	71
DRO (8015M)	drinking water	60	0	6	0	0	5	0	71
GRO (8015M)	drinking water	60	0	6	0	0	5	0	71

Notes:
1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
Dup = Duplicate
QA/QC = Quality assurance/quality control
Sr = Strontium

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

EPA Region 2 Lab

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not
				Dup	Trip[1]	Rinsate[1,2]	Field[1]	MS/MSD	
Methylene Blue Active Substances (MBAS) (SM 5540C)	drinking water	60	0	6	0	0	5	0	71

Notes:
1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
Dup = Duplicate
QA/QC = Quality assurance/quality control
Sr = Strontium

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

Isotech Lab

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
				Dup	Trip[1] Blanks	Rinsate[1,2] Blanks	Field[1] Blanks	MS/MSD	
$d^{13}C$ and $d^{2}H$ of methane (isotech)	drinking water	10	0	0	0	0	0	0	10
$d^{13}C$ of inorganic carbon (isotech)	drinking water	10	0	0	0	0	0	0	10
Stable isotopes of water (O,H) (isotech)	drinking water	10	0	0	0	0	0	0	10
Complete compositional analysis of headspace gas (isotech)	drinking water	10	0	0	0	0	0	0	10
Diss. gases methane, ethane, ethene (isotech)	drinking water	10	0	0	0	0	0	0	10

Notes:
1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
Bkgd = Background
MS/MSD = Matrix Spike/Matrix Spike Duplicate
CRQL = Contract-Required Quantitation limit.
Dup = Duplicate
QA/QC = Quality assurance/quality control
Sr = Strontium

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

NAREL Lab

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
				Dup	Trip[1] Blanks	Rinsate[1,2] Blanks	Field[1] Blanks	MS/MSD	
Gamma Spec (K-40, Ra-226, Ra-228, Th-232, Th-234, U-234, U-235, U-238) (901.1)	drinking water	60	0	6	0	0	5	0	71
~~Ra-222 (ASTM D5072/GM-7500Ra)~~ Deleted	drinking water	60	0	6	0	0	5	0	71
Ra-226 (903.1)	drinking water	60	0	6	0	0	5	0	71
Ra-228 (904.0)	drinking water	60	0	6	0	0	5	0	71
Gross Alpha/Beta (900.0)	drinking water	60	0	6	0	0	5	0	71

Notes:
1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
Bkgd = Background
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CRQL = Contract-Required Quantitation limit.
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Sr = Strontium

TABLE 1 - 12/28/11
FIELD AND QC SAMPLING SUMMARY
DIMOCK RESIDENTIAL GROUNDWATER SITE
DIMOCK, SUSQUEHANNA COUNTY, PENNSYLVANIA

TechLaw Pace Lab

Parameter/Method	Matrix	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)[3]
				Dup	Trip[1] Blanks	Rinsate[1,2] Blanks	Field[1] Blanks	MS/MSD	
Bacteria (total coliform, HPC)	drinking water	60	0	6	0	0	5	0	71
Turbidity, Nephelometric (180.1)	drinking water	60	0	6	0	0	5	0	71

Notes:
1. This QA sample will be an aqueous matrix.
2. Sample to be collected only if non-dedicated sampling equipment is used.
3. Estimate based on 5 sampling days

Key:
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CRQL = Contract-Required Quantitation limit.
Dup = Duplicate
QA/QC = Quality assurance/quality control
Sr = Strontium

Region 2

John Bourbon	732-321-6706
John Birri	732-906-6886
Deborah Kay	732-321-6762

Region 9

Rich Bauer	510-412-2312
Garrett Peterson	510-412-2389

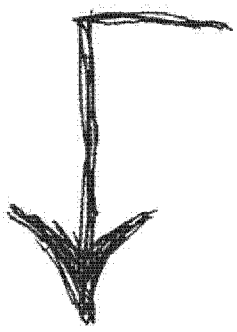
ERT Scoping Coordinator

Cheryl Hawkins	732-687-0487
TechLaw Suddha Graves	304-830-1441
Scott	

NAREL

Cindy White	334-270-7052
Tonya Hudson	334-270-3433

Rich Rupert	215-514-8773
TechLaw Gene Nance	304-830-1442



dellamia, scout

Response Requested: WO# 1201015 Dimock Final Report Review

Cynthia Caporale to: Kevin Martin 02/15/2012 08:22 AM

Cc: Robin Costas, John Curry

Kevin,

Would you check out the case narrative for WO# 1201015 and verify the sample receipt information (all samples intact, at temperature, no missing vials/bottles, etc.) and the general information about samples so that we can have a "second check" on these write-ups. Since we are generating three reports for these narratives we want to make sure we've captured the information correctly. I would like to send this report out by 10am. Would that work for you?

Cindy

Cynthia Caporale, Chief
OASQA Laboratory Branch
U.S. EPA Region III
Environmental Science Center
Fort Meade, MD
(410) 305-2732
Fax: (410) 305-3095

Proj Mana
- Reports
- find WO
- Go Case Mana

1 - Metals/Glycols
2 - VOA / SVOA / A/c
3 - The rest

The EPA Region 3 Laboratory's Quality System is NELAP accredited. The National Environmental Laboratory Accreditation Program (NELAP) is a voluntary environmental laboratory accreditation association of State and Federal agencies.

General Notes:
This report contains results for Metals and Glycols analyses only. All other parameters identified on the chain-of-custody form are included in separate reports. Lab Sample numbers 1201013-25 thru -26 and 1201013-45 thru -48 are not included in this report since these samples were designated for Voaltile Organic analysis only.

For Work Order 1201013 - **This is Report 1 of 3.**

All samples were received intact and at proper temperature.

Lab Sample number 1201013-20 was cancelled. This sample was designated for Oil & Grease analysis and shipped independently from the other analytical fractions. The sample was reassigned to Lab Sample number 1201013-33.

For samples received by the laboratory on 1/28/2012, the analyses Alcohol and Glycol for FB03 (1201013-12) were not recorded on the chain-of-custody form. A request for a Letter-to-File was submitted to the sampler on 2/9/2012.

Some samples designated for the analysis of Orthophosphorous were received at the laboratory past the established holding times. Therefore, all samples were analyzed using the Total Phosphate method and results for the analysis by the Orthophosphorous method are not included in this report Since the Orthophosphorous method was being used as a screening method to determine the need to analyze the sample by the Total Phosphate method , results for Total Phosphate are not impacted.

Samples designated for the analysis of Oil & Grease were received in sample containers inconsistent with the type needed for the routine extraction procedure. Therefore, all samples were extracted using the manual extraction technique.

Where applicable, sample results are qualified based on the highest level concentrations of field QC contamination found in the field, equipment, or trip blanks.

Metals Analysis Note:
Uranium, strontium, lithium, tin and titanium were analyzed as an on-demand analysis.

Glycols by HPLC/MS/MS Note:
Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n- 0141301481).

An HPLC/MS/MS method does not currently exist for these analytes. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits, where applicable. All applicable OASQA On Demand QA/QC protocols were followed.

The aqueous samples were injected without extraction onto the HPLC/MS/MS system

Refer to notes in the case file for additional information regarding the analysis.

REPORT 1 of 3

The EPA Region 3 Laboratory's Quality System is NELAP accredited. The National Environmental Laboratory Accreditation Program (NELAP) is a voluntary environmental laboratory accreditation association of State and Federal agencies.

General Notes:
This report contains results for Volatiles (VOAs), Semivolatiles (SVOAs), and Alcohol analyses only. All other parameters identified on the chain-of-custody form are included in separate reports. Lab Sample numbers 1201013-02, -04, -06, -08, -10, -18, -19, -21 thru -24, -27, 37 thru -44 are not included in this report since these samples were designated for Metals and Mercury analyses only.

For Work Order 1201013 - **This is Report 2 of 3.**

All samples were received intact and at proper temperature.

Lab Sample number 1201013-20 was cancelled. This sample was designated for Oil & Grease analysis and shipped independently from the other analytical fractions. The sample was reassigned to Lab Sample number 1201013-33.

For samples received by the laboratory on 1/28/2012, the analyses Alcohol and Glycol for FB03 (1201013-12) were not recorded on the chain-of-custody form. A request for a Letter-to-File was submitted to the sampler on 2/9/2012.

Some samples designated for the analysis of Orthophosphorous were received at the laboratory past the established holding times. Therefore, all samples were analyzed using the Total Phosphate method and results for the analysis by the Orthophosphorous method are not included in this report Since the Orthophosphorous method was being used as a screening method to determine the need to analyze the sample by the Total Phosphate method , results for Total Phosphate are not impacted.

Samples designated for the analysis of Oil & Grease were received in sample containers inconsistent with the type needed for the routine extraction procedure. Therefore, all samples were extracted using the manual extraction technique.

Where applicable, sample results are qualified based on the highest level concentrations of field QC contamination found in the field, equipment, or trip blanks.

SVOAs Analysis Note:
All samples were extracted by EPA SW-846 Method 3520C followed by analysis using EPA SW-846 Method 8270D. Refer to notes in case file for additional information regarding the analysis.

A separate calibration curve is used for two compounds, 2-methoxyethanol and 1-methylnaphthalene, with quality control requirements per the on-demand protocol.

Quantitation limit for 2,4-Dinitrophenol is qualified estimated "UJ" in sample 1201013-01 due to zero percent recovery in the low-spike quality control check. Quantitation limits for 2,4-Dinitrophenol, pentachlorophenol, and 4,6-dinitro-2-methylphenol are qualified estimated "UJ" in samples 1201013-03, -05, -07, 09, -12 thru -17, -28-36 due to low recovery in the low-spike quality control checks.

VOA Analysis Note:
Acrylonitrile was analyzed on-demand using CLP equivalent methodology. This analyte does not appear in the data tables or the QC summary and all data for this compound is summarized here. Acrylonitrile was not detected in any of the samples above a quantitation limit of 2 ug/L. A four point curve was analyzed (2, 5, 10 and 20 ug/L). The samples were preserved to a pH<2 with HCl. A low level second source blank spike analyzed at a concentration of 2 ug/L had a recovery of 112%. A mid level second source blank spike analyzed at a concentration of 5 ug/L had a recovery of 102%. A duplicate second source blank spike at 5 ug/L had 205% recovery. Due to this high recovery, duplicate blank spikes from the primary source were analyzed. Recoveries for these spikes were 110% and 157%.

2-Chloroethylvinyl ether is not included in the analysis. 2-chloroethylvinyl ether breaks down in acidified samples.

Matrix spike/matrix spike duplicate analysis could not be completed due to insufficient sample volume. A single matrix spike was performed for samples 1201013-14 and 1201013-33.

The acetone result for sample 1201013-36 is qualified with a "K" due to an interference from isopropanol.**Alcohols Analysis Note:**None.

The EPA Region 3 Laboratory's Quality System is NELAP accredited. The National Environmental Laboratory Accreditation Program (NELAP) is a voluntary environmental laboratory accreditation association of State and Federal agencies.

General Notes:
This report contains results for Inorganic analyses only. All other parameters identified on the chain-of-custody form are included in separate reports. Lab Sample numbers 1201013-25 thru -26 and 1201013-45 thru -48 are not included in this report since these samples were designated for Voaltile Organic analysis only.

For Work Order 1201013 - **This is Report 3 of 3.**

All samples were received intact and at proper temperature.

Lab Sample number 1201013-20 was cancelled. This sample was designated for Oil & Grease analysis and shipped independently from the other analytical fractions. The sample was reassigned to Lab Sample number 1201013-33.

For samples received by the laboratory on 1/28/2012, the analyses Alcohol and Glycol for FB03 (1201013-12) were not recorded on the chain-of-custody form. A request for a Letter-to-File was submitted to the sampler on 2/9/2012.

Some samples designated for the analysis of Orthophosphorous were received at the laboratory past the established holding times. Therefore, all samples were analyzed using the Total Phosphate method and results for the analysis by the Orthophosphorous method are not included in this report Since the Orthophosphorous method was being used as a screening method to determine the need to analyze the sample by the Total Phosphate method , results for Total Phosphate are not impacted.

Samples designated for the analysis of Oil & Grease were received in sample containers inconsistent with the type needed for the routine extraction procedure. Therefore, all samples were extracted using the manual extraction technique.

Where applicable, sample results are qualified based on the highest level concentrations of field QC contamination found in the field, equipment, or trip blanks.

TDS Analysis Note:
Results for samples 1201013-13 thru -17, -28, -31 thru -34 are qualified estimated "J" and quantitation limits for samples 1201013-12, -29, -30, -35, -36 are qualified as estimated "UJ" due to problems with negative values for the blank and some of the samples. In addition, there was a high relative percent difference (RPD) obtained for one of the duplicate analyses.

Nitrite/Nitrate and Total Nitrogen Analysis Note:
Samples were run as an on-demand analysis.

Oil and Grease Analysis Note:
Samples were received in containers not conducive to use on the Horizon SPE-DEX automated system. Therefore, manual extraction technique was used for all samples. Refer to notes in the case file for additional information.

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